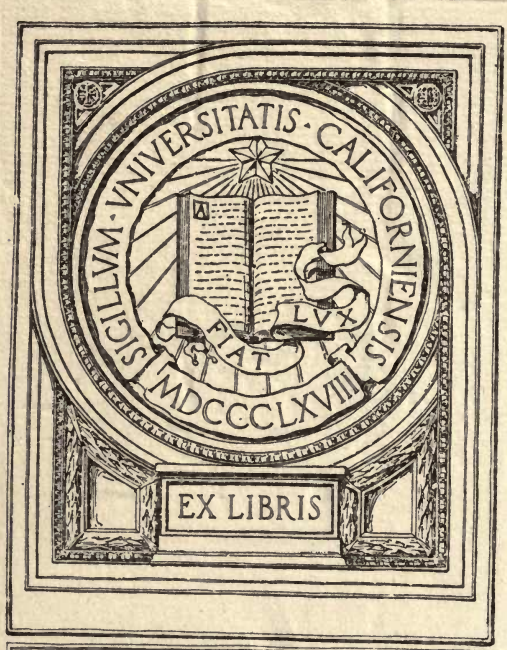
YB
77620


SIGILLVM · VNIVERSITATIS · CALIFORNIENSIS
LVX
FIAT
MDCCCLXVIII
EX LIBRIS

Putnam's Library
Standard Literature

THE NATURAL HISTORY AND ANTIQUITIES OF SELBORNE

THE
NATURAL HISTORY
AND ANTIQUITIES OF
SELBORNE

BY

GILBERT WHITE

EDITED, WITH AN INTRODUCTION AND NOTES BY
L. C. MIALL, F.R.S., AND W. WARDE FOWLER, M.A.

NEW YORK: G. P. PUTNAM'S SONS
LONDON: METHUEN & CO.
1901

ERRATA

P. ix, last line. Gilbert White was not born at the Wakes, but at Selborne Vicarage.

P. xii, line 17. The verses were written by another Hester Mulso, the niece of Mrs. Chapone.

P. xii, line 27. *Dele.* "as". Line 28. *For* "also as" *read* "as also".

P. 70, note 2. *For* "beneath which, etc." *read* "between which, etc."

CONTENTS

	PAGE
PREFACE	v
INTRODUCTION	ix
REDUCED FACSIMILE OF ORIGINAL TITLE PAGE	*opposite* xxxvi
ADVERTISEMENT TO ORIGINAL EDITION	xxxix
THE NATURAL HISTORY OF SELBORNE	1
THE ANTIQUITIES OF SELBORNE	237

INTRODUCTION.

Sections I.-III. of this Introduction are by L. C. MIALL; *Section IV. by* W. WARDE FOWLER.

I.—GILBERT WHITE.[1]

THE events of Gilbert White's life are not striking. He was born at Selborne, in 1720, being the son of a barrister and country gentleman, John White, and Anne Holt, daughter of Thomas Holt, rector of Streatham. His grandfather, Gilbert White (1650-1728), had been vicar of Selborne. "This Gilbert White was apparently a well-to-do man, for he left considerable bequests to the village, and doubtless inherited wealth from his father, who had been an eminent citizen of Oxford in the time of Cromwell. Sampson White, whom we may call the founder of the family, was a draper in the High Street; he had migrated to the city from Coggs, near Witney, where his family had been settled for many generations. He was mayor in 1660, served as 'butler of the beer-cellar' at the coronation of Charles II., and was knighted among many others at that gay time."[2] About a year after the naturalist's birth his parents removed to Compton, near Guildford, returning to Selborne, however, some ten years later. John White died there in 1758, his wife in 1739. The Wakes,[3] the house in which the naturalist was

[1] Bell's memoir, and other parts of his edition of White's *Selborne* (2 vols. 8vo, 1877), contain a pretty full account of the life of Gilbert White, which has been freely drawn upon for this sketch. Some interesting facts and suggestions have been taken from Mr. Warde Fowler's "Gilbert White of Selborne" (*Macmillan's Magazine* for July, 1893, reprinted in *Summer Studies of Birds and Books*). A full and very careful Life by Prof. Alfred Newton has lately appeared in the *Dictionary of National Biography*.

[2] Warde Fowler, *Summer Studies of Birds and Books*, p. 207.

[3] Named after one Wake, a former owner of the land.

born, and where he spent the last thirty-five years of his life, was built by Gilbert White, the vicar of Selborne, bequeathed to his son-in-law, the Rev. Charles White, and by him to Gilbert White, the naturalist, his nephew by marriage.

Gilbert White, the naturalist, was the eldest of eleven children, three of whom died in infancy. Those of his brothers and sisters who are in any degree memorable, either for what they did, or for their close association with the naturalist, were:—

(1) Thomas Holt (1724-1797), who made a fortune as a London ironmonger, and wrote papers on natural history, particularly on the trees of Great Britain. He was elected to the Royal Society in 1777.

(2) Benjamin (1725-1794), a London bookseller, who brought out the *History of Selborne*, besides most of the works of Ellis, Pennant, Montagu, and other English naturalists; he succeeded Gilbert in the enjoyment of the estate at Selborne.

(3) Rebecca (b. 1726), married to Henry Woods, of Shopwyke, near Chichester.

(4) John (1727-1781), who was chaplain at Gibraltar, and after 1772 vicar of Blackburn in Lancashire. He corresponded with Linnæus about the animals of Andalusia, and wrote a *Natural History of Gibraltar*, which did not, however, get into print. Gilbert White[1] calls him "a very exact observer," and often cites him as an authority.

(5) Ann (b. 1731), who married Thomas Barker, and had a son Samuel and three daughters, who often appear in Gilbert White's correspondence.

(6) Henry (1733-1788), who became rector of Fyfield, and took pupils there. He kept meteorological observations, no doubt at Gilbert's request, for comparison with those made at Selborne. Thomas White at South Lambeth, and Thomas Barker (Gilbert White's brother-in-law) at Lyndon, in Rutland, did the same. Extracts from Henry White's *Diary* have been printed in *Notes on the Parishes of Fyfield, etc.*, by E. D. Webb (Salisbury, 1898).

[1] Letter XIV.

Gilbert was sent to school at Basingstoke, where his master was the Rev. Thomas Warton, father of Joseph and Thomas Warton, who still hold places in English literary history. In December, 1739, he was admitted a commoner of Oriel College, Oxford, where he became fellow in 1744. He took holy orders in 1747.

Mr. Warde Fowler remarks that "as a Fellow he [Gilbert White] was of course ordained, and later on he took a small college living in Northamptonshire [Moreton Pinckney]; but he took it on the understanding that he should never reside there, and to this resolution, which in these days seems shocking, he steadily adhered all his life. I do not wish to dwell on this, or on his other relations to his college, which were not wholly of a pleasant character; but Oxford men are aware that a non-resident who insists on his right to take his turn as Proctor, or who holds his Fellowship for fifty years, is not likely to be popular with his college."[1] We have to admit that for fifty years White steadily refused all preferment that would vacate his fellowship, and though he held curacies (Swarraton, Selborne, Durley, Selborne again, Farringdon, Selborne a third time) he passed the bulk of his life in a somewhat indolent comfort at the old family house in Selborne.

We must not judge Gilbert White by the standard of work which is now set in Church and University. In the eighteenth century it was enough for the parson to lead a decent life, to conform to the rules of good society, and to meet the statutory claims upon his time. White lost nothing in the esteem of his parishioners by living like a squire of small fortune. Neither he nor they thought it a duty to multiply Church services, or to abstain from the usual diversions of the country gentleman. He was attentive to his set duties, a good neighbour, a kind master, and a friend to the poor. It was remarked as a sentiment of his "that a clergyman should not be idle and unemployed". If he was content, for the love of Selborne and lettered ease, to give up all hopes of preferment, that was, in the view of his contemporaries, his own affair. Even strict judges, born in a later and less indulgent age,

[1] *Summer Studies of Birds and Books*, p. 210.

will not place Gilbert White in the common herd of non-resident fellows, non-resident parsons, holders of sinecures, and pensioners who had never served. Late in life he gave the world assurance that he was not only one of the keenest and surest of naturalists, but also a charming writer of English. It was by no dull and formal piece of scholarship that he repaid the debt imposed upon him by the long tenure of a college fellowship and a college living, but by a masterpiece, now to be counted among those possessions of the English race which are above price.

White never married. It has been conjectured that he was attached, perhaps engaged, to Hester Mulso, the sister of an old college friend. Hester Mulso, once widely known as Mrs. Chapone, was a blue-stocking, and a notable friend of virtue in young ladies. Her literary parties are described by Fanny Burney, who thought that they would be prodigiously mended by a little rattling. Her verses to Gilbert White's tortoise, Timothy, suggested the amusing letter from "your sorrowful reptile," which is to be found in White's correspondence. In the long series of letters from John Mulso to White, Professor Newton finds no confirmation of the story of an attachment between White and Hester Mulso.

It is not likely that we shall ever know what made a naturalist of Gilbert White. Was it some school-fellow at Basingstoke? Was it the example of Dr. Stephen Hales, who among other livings held that of Farringdon, the next parish to Selborne, and was as well known to Gilbert White also as to his father and grandfather? In Letter X. to Pennant, White says: "It has been my misfortune never to have had any neighbours whose studies have led them towards the pursuit of natural knowledge; so that, for want of a companion to quicken my industry and sharpen my attention, I have made but slender progress in a kind of information to which I have been attached from my childhood". Yet his brothers, two of them more particularly, were fond of natural history, so that, but for this express statement, we should have been ready to suppose that the taste ran in the family. With English squires and parsons natural history links on to field-sports and planting. White and some of his elders seem

to have been fond of both pursuits, though their opportunities were limited. Books cannot have helped him much. There were, it is true, Willughby and Ray, but, to say nothing of the Latin in which many of their works were written, they were fitter to satisfy than to excite curiosity. In White's youth there was nothing in the least like the *Natural History of Selborne*, but only dry treatises and collections of marvellous tales, little better than the bestiaries of the dark ages.

White's notes, many of which are preserved in manuscript in the British Museum, were written down at short intervals, while the circumstances were fresh. They were often copied into private letters; they formed the groundwork of his published papers, and in the end they yielded the best part of the *Natural History of Selborne*. From 1768 onwards White recorded his observations in the *Naturalist's Journal* (London: Printed for W. Sandby, in Fleet St., MDCCLXVII). His copy of the first year's journal is marked: "Gil. White, 1768. The gift of the Honourable Mr. Barrington the Inventer. The Insects are named according to Linnæus: the plants according to the sexual system: the birds according to Ray." In 1771 and following years the *Naturalist's Journal* is marked as "Printed by Benjamin White, at Horace's Head, in Fleet Street" (no date). The later issues have an engraved instead of a letterpress title-page. White sometimes ruled his own books, or if he returned to Barrington's form, wrote across many of the columns. The diaries, of which there are six bound volumes, are now in the British Museum, having been purchased of the Rev. G. Taylor in 1881. It was from them that Dr. Aikin compiled the *Naturalist's Calendar* and the *Observations on Various Parts of Nature*.

It is characteristic of Gilbert White that he takes little note of the progress made by natural history in his own lifetime. It was the age of Linnæus, and White cannot be reproached with inattention to him at least. But the reader of his published and private letters might fail to be reminded that Buffon and Réaumur and De Geer were then writing their histories, that John Hunter was dissecting and making

experiments, that the British Museum and the Botanic Gardens at Kew were being set up, or that Cook's voyages were making known the natural productions of another hemisphere. Some of these tokens of scientific activity are passed over altogether; others are slightly mentioned; upon none of them does White dwell repeatedly and with interest.

White's education in natural history, so far as it was a matter of books, consisted mainly in the study of Ray and Linnæus. Swammerdam he quotes in one or two places, but he shows no general acquaintance with the *Biblia Naturæ*. Réaumur and De Geer were, for some reason that we can only guess at, inaccessible to him. In a letter of 1774 he says, "I wish I could read Réaumur and De Geer". Two years later we have him getting Réaumur's account of *Hippobosca* transcribed for his own use. It is not to be supposed that White was unable to read the French of Réaumur and De Geer; he means that their works were not to be had in Selborne. Yet so many copies of Réaumur's *Histoire des Insectes* had been printed (it is still a very common book), that the difficulty of studying his writings is not quite intelligible. De Geer's great work may well have been hard to get at in 1774, but one would have thought it worth the trouble. White died in almost complete ignorance of the discoveries of these great naturalists. Leeuwenhoeck and Malpighi he never names; their work was largely anatomical and microscopic, and White was not trained in either method.[1] Nor does he seem to have known Buffon, who could have told him that the noctule had already been described. It is probable that the poet Gray, and others who gained no fame as naturalists, were much better read in zoology than Gilbert White. His knowledge of plants was slight, and we find in his books or letters few references to the great development of scientific botany which took place during his lifetime, though he was deeply impressed with the systematic work of Linnæus. Ray, Willughby, Hudson and Linnæus taught

[1] In a letter of November 15, 1775, he derides the microscope. "O fie! for so young a man to use glasses that magnify two hundred times, when Linnæus planned and perfected his whole sexual system *nudis oculis*." But eight years later (Letter to Churton, August 20, 1783) he bids his correspondent apply a magnifying glass to *Nostoc* and "try to discover the seeds".

him to name many of his beasts, birds, insects and flowers, and thus furnished he turns to the work in which his real strength lay, to what he calls (October 31, 1777) "true natural history, because it abounds with anecdote and circumstance," the natural history which seeks above all to study the animals and plants that we have about us as *living* things. "Learn as much as possible the manners of animals," he writes to his brother John; "they are worth a ream of descriptions."

In the *Natural History of Selborne* White frequently quotes or makes use of the following books:—

Linnæus, *Systema Naturæ;* Linnæus, *Synopsis Stirpium;* Ray, *Synopsis Methodica Avium et Piscium;* Ray, *The Wisdom of God Manifested in the Works of the Creation;* Ray, *Select Remains of, with his life,* by the late W. Derham; Ray, *Historia Insectorum;* Hudson, *Flora Anglica;* Derham, *Physico-Theology;* Scopoli, *Anni Historico-Naturales;* Stillingfleet, *Miscellaneous Tracts relating to Natural History;* Pennant, *British Zoology;* Hales, *Statical Essays;* Willughby, *Ornithology;* Geoffroy, *Histoire des Insectes.*

Whenever he wished to decorate a letter with quotations, Virgil, Milton and the Bible seem to have come first into his thoughts. Chance quotations show that he had read more widely at some time, but without keeping up (we suppose) any great familiarity with the majority of his authors. All the books which were essential to the *Natural History of Selborne* would have gone into a single shelf.

Three of White's correspondents are very particularly associated with the *History and Antiquities of Selborne.* These are Thomas Pennant, the Hon. Daines Barrington, and the Rev. Dr. Chandler.

Thomas Pennant (1726-98) was a country gentleman of Downing, near Holywell, in Flintshire. His character and methods are sufficiently delineated in *The Literary Life of the late Thomas Pennant, Esq., by Himself* (London, 4to, 1793), not a posthumous, but as he styles it a "post-existent performance". It relates the career of a man of boundless activity and much self-esteem. He tells how he got a taste for natural history at the age of twelve by reading Willughby's *Ornithology,* searched Cornwall for minerals, wrote an account

of an earthquake which got printed among other narratives of the same kind in the *Philosophical Transactions*, described fossils and corals from Coalbrookdale, and corresponded with Linnæus. In 1761 he began to publish the *British Zoology*, which gave what was then considered to be a fair account of most of the groups of British animals, the insects, however, being left out altogether. Many other books followed: *Tours in Scotland*, *A Tour in Wales*, *A History of Quadrupeds*, *Arctic Zoology*, *London*, etc. Some of his books went through several editions, and he was one of the most successful writers of the age. Opinions differed as to their value. Percy ran down his descriptions, and declared that "a carrier, who goes along the side of Loch Lomond, would describe it better". Johnson defended Pennant vigorously. "He's a Whig, sir, a sad dog, but he's the best traveller I ever read." A hundred years later one is obliged to admit that Pennant's merits were only moderate. He was not enough of a zoologist to write books on zoology, and the gap left by the death of John Ray was first filled to some extent by George Montagu in zoology, as by Sir J. E. Smith in botany. Some of Pennant's books on natural history are readable; others are not; both kinds are mainly compilations from Linnæus, Buffon, Pallas and other writers. His topographical books are the offhand productions of an inquisitive man, who loved riding about the country, and wrote with ease.

White had no great love for Pennant. He seems in the correspondence to complain of Pennant's stinginess and ungentlemanly behaviour to his brother John. Bell, in his edition of White's *Selborne*,[1] says much about Pennant's use of White's information without acknowledgment. Yet in the *British Zoology*[2] Pennant announces his debt. In the *Synopsis*, however (1771), and the *History of Quadrupeds* (1781) the noctule and the harvest-mouse are included without mention of Gilbert White. I do not observe that White resented this treatment. Our present usage in the matter of acknowledgment was not then firmly established. Linnæus is very careless about it, and White himself never mentions

[1] Vol. i., p. xli.
[2] 8vo ed., 1768; see Preface, p. xiii, Appendix, p. 498.

by name Dr. Chandler, to whom he was under great obligations in his account of the antiquities of Selborne.

To Pennant, as a man who had the ear of the public, and was the best-known English zoologist of the day, Gilbert White communicated his discoveries and observations. His first letters to Pennant (beginning with Letter X.) were written without any intention of independent publication. When he collected these and others into a book, he not only retained Pennant's name, but addressed to him additional letters, which had been written to complete the history. The first forty-four letters profess to be letters to Pennant, but only those which bear a date were actually sent by the post.

The Hon. Daines Barrington (1727-1800), to whom the rest of the letters in the *Natural History of Selborne* were addressed, was a son of the first Viscount Barrington. He entered at the Bar, and became a Welsh judge. His *Observations on the Statutes* are said to contain much curious information, which has been ransacked by writers on jurisprudence. He edited (very badly) King Alfred's *Orosius*. But his chief contributions to knowledge related to natural history and kindred subjects.

If the reader should happen to come across the quarto volume of *Miscellanies*, by the Hon. Daines Barrington (London, 1781, pp. 558 and viii), he will easily learn from it a good deal respecting White's favourite correspondent, and also something about the state of natural history in England when the *History of Selborne* was preparing for the press.

The early pages are occupied by "Tracts on the Possibility of Reaching the North Pole". Instances are quoted of sea-captains who got within 2°, 1° and even 30′ of the Pole, which leads the modern reader to conclude that old log-books may be very untrustworthy. One result of the information respecting the polar regions which he brought together was that the Royal Society applied to the Admiralty for an Arctic expedition. The request was granted, and Captain Phipps was sent out in 1773. The expedition returned the same year, having reached a latitude of 80·5°, a very moderate success if Barrington's expectations had been just. The essay on the Turkey seeks to prove that, though the bird was

indigenous to Virginia, it was not peculiar to America, and first reached Europe from Asia. The account of the Reindeer collects many miscellaneous observations from books, and notes some facts respecting a reindeer which was kept three years at Homerton. The essay on the "Bat or Rere-Mouse" owes all its interest to some observations on the hibernation of bats, communicated by Mr. Cornish, a surgeon of Totness; the rest is taken from Pennant and other authors, and indirectly brings in some of White's information, which had been communicated to Pennant's *British Zoology*. There is also the well-known essay on the "Periodical Appearing and Disappearing of Certain Birds at Different Times of the Year," which is here reprinted, with additions, from the *Philosophical Transactions*. He admits that periodical migrations may take place from one part of a continent to another, or even across a narrow strait, but it seems to him highly improbable that birds should traverse seas and oceans. He criticises the accounts of Adanson and Wager, and defends the theory of winter-torpidity, though he owns that he had never seen birds in the torpid state. He quotes from White's Letter VIII.[1] the observations that woodcocks pair before they retire, and that the hens are then forward with egg; also from Letter VII. the mention of the migration of the ring-ousel. An essay on the torpidity of the swallow tribe follows, in which White's Letter XXXVI. first appeared in print. Another essay contains Barrington's sceptical thoughts upon the common belief that the cuckoo neither hatches nor rears its young, which he finds to take its rise in a passage of Aristotle. It may be that some of the cases quoted, in which the cuckoo is said to have hatched and fed her own young, are well-founded. White's Letter XXIV. is rather awkwardly introduced into this essay. Then we have a weak and petulant criticism of the Linnæan system. Barrington would have what White calls the "life and conversation" of animals more attended to. To give a better idea of his meaning, he refers to White's letters on the British swallows. White himself never disparaged system, though he

[1] The numbers refer to the letters to Barrington in the *History of Selborne*.

was so intent upon the study of live natural history. More than once in his correspondence he dwells upon the necessity of a systematic foundation for work that is meant to last. Thus, writing to his brother John (May 26, 1770), he says: "I am glad you begin to relish Linnæus; there is nothing to be done in the wide, boundless field of natural history without system," and other passages to the same effect might be quoted. Several very interesting accounts of remarkable young musicians are to be found in the *Miscellanies*. Barrington had personally witnessed and critically examined the early performances of Mozart, Charles and Samuel Wesley, and Crotch. His anecdotes have often been drawn upon by later writers.

These are the best things which the naturalist finds in Barrington's *Miscellanies*. He also contributed to the *Philosophical Transactions* a number of papers which were never collected. The chief of these is one on the "Singing of Birds". The sounds uttered by birds are, he thinks, no more innate than language is in man. He gives instances of birds which have caught the song of a foster-parent or a fellow-captive. He thinks that hen birds are commonly mute and dull-coloured, for their own safety during incubation. The repeated references to Barrington in Darwin's *Descent of Man* show that his observations still constitute an important part of the literature of animal instinct. He wrote also on the temperature of Italy in ancient and modern times (see White's Letter V.); on the trees indigenous to Great Britain (where he very properly decides that the Spanish chestnut is not among the number); on rain at different heights, and on Dolly Pentreath, the last person who spoke the Cornish language. His plan of a *Naturalist's Calendar* was put into practice by Gilbert White and others. Barrington was F.R.S., and presented White's papers on Swallows to the Royal Society. A tropical myrtle, *Barringtonia*, named after him by Forster, still keeps his name familiar to the new generations of botanists. He survived long enough to become one of the oddities among Charles Lamb's *Old Benchers*. By a singular fate the correspondent of Gilbert White is the bencher whose bill for sparrow-poison is disallowed.

In the eyes of many naturalists (Gilbert White among the rest) Barrington did good service by issuing a form for the observation of periodical natural phenomena. This was the *Naturalist's Calendar*, which was published regularly for many years. Here were provided columns for meteorological readings, and for the appearance or disappearance of leaves, flowers, insects and birds. It was hoped that the *Calendar* would rescue many facts which would find a use at some future day. Even in White's diligent hands little seems to have come of these formal entries. He did, it is true, fill his own copy of the *Naturalist's Calendar* with valuable notes, but it is not the things demanded by Barrington, it is the thoughts of Gilbert White himself which give them all their present interest. Any book of blank paper would have done just as well for a vehicle. In natural history and meteorology mere facts are cheap as summer dust; we want not heaps of crude facts, but facts arranged and interpreted, questions and the answers to questions. From Bacon's time to ours sanguine men have vainly hoped that records of occurrence, bald notes of time and place, and so forth, would furnish valuable material to the future worker. But the fruits of such labours have not answered expectation; perhaps we might say that there were no fruits at all, or at least that they were never gathered in. Real scientific investigators have not troubled the dusty piles of records and statistics; they have trusted to fresh and living experience. After nearly a century and a half, crowded with unavailing labours, we may claim to be wiser in some particulars than Barrington and White; we can see better than was then possible which of their schemes were hopeful and which hopeless. It is now time to recognise that the mechanical exploration of nature is barren. Nothing has come or will come (as Biot long ago declared) of systematic observations made without special object by men who record with busy pen but unreflecting mind.

Dr. Richard Chandler (1738-1810), to whose learning and diligence White's account of the antiquities of Selborne owed so much, was first made widely known by his description of the Oxford marbles (*Marmora Oxoniensia*, 1763). He was afterwards sent with two companions by the Society of Dilet-

tanti to visit Asia Minor, and procure drawings of ancient monuments and inscriptions. After two years of exploration Chandler returned to England, and published the materials collected in a series of volumes (*Ionian Antiquities*, 1769; *Inscriptiones antiquæ*, 1774; *Travels in Asia Minor*, 1775; *Travels in Greece*, 1776). In 1779 he was presented by his college (Magdalen) to the livings of East Worldham and West Tisted, and thus became for a few years neighbour to Gilbert White. In 1800 he removed to Tilehurst, near Reading, where he died. His life of W. Waynflete, Bishop of Winchester, was published posthumously in 1811.

In 1767 White seems to have met Pennant in London, and to have held conversation with him on natural history. Pennant encouraged White to send him notes, and at length a correspondence was begun, which was the germ of the *History of Selborne*. Both Pennant and Barrington favoured, if they did not originate, the notion of an account of the natural history of the parish. In 1774 and 1775 White sent to the Royal Society his account of the swallows and swifts,[1] and this formed a substantial instalment of the projected history. He carried out the work of collection and revision in an extremely leisurely way, and the *History* did not appear till 1789.

White died after a short illness in 1793, and was buried in Selborne churchyard, to the north of the chancel, where his gravestone, inscribed "G. W., June 26, 1793," may still be seen.

In person White was small, only five feet three inches high, and was described by one who knew him well[2] as of spare form and remarkably upright carriage. He would never sit for his portrait. Even in middle life he had to complain of "the infirmities of a deaf man," but his sight was particularly good up to old age. In his younger days he had been a sportsman. All his life he was fond of music, though he neither played nor sang. Tradition and his own writings preserve a tolerable picture of his character. We cannot fail to remark his old-fashioned courtesy, his good humour, his

[1] *Phil. Trans.*, vols. lxiv., p. 196, lxv., p. 258.
[2] His nephew, the Rev. Francis White, in Bell's memoir.

liberality to all about him, his care about small things, and his exactness in relation. We are told of his many Christmas presents to his parishioners, of his paying for the schooling of poor children, of the indulgence which he showed to old servants. His nephew thought that he particularly excelled in addressing his poor neighbours, and making them feel that he was their friend.

No explanation of the merit of the *Natural History of Selborne* can be at all adequate which does not dwell upon the reality and truth of White's descriptions. His personal knowledge of nature was great, not in relation to the knowledge accumulated in books, but in comparison with the direct experience of most other naturalists of any age. Here is one great difference between him and the imitators who have hoped to succeed by mere picturesque writing. White is interesting because nature is interesting; his descriptions are founded upon natural fact, exactly observed and sagaciously interpreted. Very few of his observations and not many of his inferences need correction more than a hundred years after his death.

Then there is the human interest of the *History!* What White calls his "anecdotes," his pieces of unpublished information, had rested in his mind for years, and grown warm there. Some of them had already been related to more than one correspondent, and the best way of telling the story had been found out by repeated trial. The book bears witness to White's love of all that bears upon the daily life of men. The agricultural value of the different soils of Selborne, the means of subsistence of the poor of the parish, deer-stealing, the long shining fly that lays its eggs in bacon drying in the chimneys, the making of rushlights, the causes of leprosy and its cure by improved food and cleanliness, the injury done to garden shrubs by repeated freezing and thawing and the way to prevent it—these and other homely practical topics occupy White as pleasantly as song-birds or curious insects.

White now and then foresaw the importance of inquiries which had not as yet been instituted. See, for instance, what he says about the knowledge of noxious insects (Letter XXXIV. to Pennant), about the improvement of pastures

by means of the study of grasses (Letter XL. to Barrington), and his recognition of the effect of earthworms on the fertility of soils (Letter XXXV. to Barrington). He does not, it is true, expressly remark that earthworms, by perpetually bringing up earth from below and depositing it on the surface of the land, cause stones and other objects to sink into the ground. The full importance of their operations and the exact manner in which they are carried out was left to be set forth by Charles Darwin, one of those "inquisitive and discerning persons" whom White longed to set working upon the economy of the earthworm.

Mr. Warde Fowler[1] gives White credit for being the first, so far as he knows, to notice protective resemblance, which has since become so fruitful a study. In Letter XVI. (April 18, 1768) White gives the following description of the stone curlew: "The young run immediately from the egg, like partridges, etc., and are withdrawn to some flinty field by the dam, where they skulk among the stones, which are their best security; for their feathers are so exactly of the colour of our gray spotted flints that the most exact observer, unless he catches the eye of the young bird, may be eluded". It is very singular that White's friend, whom he calls "a man of observation and good sense, but no naturalist," John Woods of Chilgrove, near Chichester,[2] should give the same account of the stone curlew in much the same words (Letter XXXIII., November 26, 1770). "They breed on fallows and layfields abounding with gray mossy flints, which much resemble their young in colour, among which they skulk and conceal themselves." The date of Woods' observation cannot be ascertained; he quotes from his own *Naturalist's Journal*. The mere documentary evidence fails to show whether the words are those of White or Woods, but we can hardly doubt that it was really White who hit upon this capital observation, worthy of the best passages in the *History of Selborne*.

White's almost total lack of ambition enhances, as it happens, the literary quality of his *History*. There is none

[1] *Summer Studies of Birds and Books*, p. 217.

[2] John Woods was brother to Henry Woods, who married Gilbert White's sister, Rebecca.

of the bustle of the man who carries on a wide correspondence, none of the hurry and excitement of the discoverer who fears to be forestalled. I can find no indication that White ever left England, and his travels were confined, for all that we know, to the southern and central counties. He visited Devonshire in 1750. In one place he speaks of having seen Eldon Hole in Derbyshire, but he has not been traced further north. Nor did he greatly enlarge his knowledge of the world by books. I have met with no proof that he was in the habit of reading any modern foreign language. Selborne was to White a kind of Robinson Crusoe's island, which comprehended within itself all his daily interests. Whatever a pair of particularly quick eyes could discover there is set down for us, but the outer world, though not shut out, is seen only on the horizon. We have glimpses of London smoke and Oxford spires; letters come in now and then from distant parts of the country, but there is no distraction or complication. All White's letters breathe the same air and reflect one mind.

While Gilbert White was penning letters at Selborne Horace Walpole was penning letters at Strawberry Hill. Walpole's life overlaps White's a little at both ends. How totally unlike are the two collections—unlike in bulk, in style and in the topics chosen! They might have been written in different centuries. That Walpole cares nothing for natural history is easy to understand, but it is singular that White should care so little for what was passing in the outer world. Not only the fashionable circles, which were so much to Horace Walpole, but the conquest of Canada, the conquest of India, and the loss of the American colonies are at most barely mentioned in any letter of his. The French Revolution does indeed suggest a remark or two in his letters to Marsham, but White gets back immediately to the wet fallows and the woodpeckers. I do not know that he ever names Chatham or William Pitt, Clive, Warren Hastings, Burke or John Wesley.[1] Gibbon is mentioned once or twice as a Hampshire gentleman, who is about to publish a work on the later Roman Empire. It is an element in the rustic charm of

[1] This statement will very likely require modification if more of White's letters should appear in print.

the *History* that White's attention was perpetually fixed upon one narrow spot of English ground.

White was a man of few books and of no great range of thought. His mind was a lens exquisite in definition, but of small field. When it was truly focussed upon any object, it revealed many details which escape the ordinary observer. He not only saw well, but described well, rapidly gathering round the point of interest all the illustrative facts which his experience yielded. At such times White is at his very best —modern, anticipatory and scientific. Outside this small field of clear light there naturally existed a hazy region of imperfectly apprehended facts and notions. The existence of such a region of half-knowledge is not remarkable; it is probably to be found in every mind; what distinguished White was the exceptional clearness and the narrow compass of the illuminated tract. In the *Natural History of Selborne* we pass from a passage which is for ever memorable in biology, and there are many such, to discussions in which we feel that his mind was only half awake, that he was merely giving out the teaching of his own age. Of this kind are his meditations on physico-theology, reflections of the not very vigorous thought of Ray and Derham. Like them, and like most English and German naturalists of the eighteenth century, White multiplies instances of natural contrivance, but ignores all the difficult cases.

I have noticed a few of the special features of the *Natural History of Selborne*, but no analysis can fully explain its peculiar charm. There is genius in the book, which makes things for ever memorable which another might have attempted to tell without ever catching our attention. Think of the common man's tiresome details of the weather which he has known in past years, and then recollect Gilbert White's account of his great frosts, his hot summers and his thunderstorms. Of all English books on natural history this has been most read and most enjoyed. Learned and simple, practical and contemplative, working naturalists and poets— all find in Gilbert White an author to their taste. Probably no book in any language has incited more people to take up the study of natural history. Many have tried to write letters

on White's plan, but their eyes were not so good as his; they failed to pick out the points of real interest, and they had no Selbornes to describe. By the use of natural gifts exactly suited to the task a man who was sagacious rather than profound, and well-read rather than learned, wrote us a book which will endure for ever, a small thing perfectly done.

II.—SELBORNE.

I have heard people say that Selborne is only a commonplace English village, which owes all its interest to the circumstance that a man of genius once lived there. With this view of the matter I totally disagree. Selborne is not at all commonplace; its variety of soil and of elevation, its terraces, woods, heaths and waters, its antiquities and historical associations, make it both remarkable and charming. White says of it: "The parish I live in is a very abrupt, uneven country, full of hills and woods, and therefore full of birds". It is not less full of flowers and insects. Selborne is beautiful, calm, but not in the least dull. There are few parishes in England fitter to rear a naturalist, and Selborne had no doubt a great share in the making of Gilbert White.

The seclusion of Selborne was somewhat more complete in White's time than now. The hollow lanes, though practicable for horsemen and post-chaises, must have made the home-end of every journey slow and fatiguing.[1] The great roads once gained, either the Portsmouth Road or the Winchester Road, the way to London was particularly good. White could visit cities whenever he pleased to make the effort, and the cities which he most frequented were of notable interest—London, where two of his brothers carried on business, and Oxford, whither he was often drawn by college affairs and lifelong friendships. London was a day's journey, Oxford a two days' journey by post-chaise. Selborne was exactly the

[1] Visitors to Selborne must not suppose that the old road to Alton, now impassable, was the only one in White's day. In 1780 he recommends Churton to drive from Alton to Selborne by Farringdon and the Horse and Jockey.

place for a man of White's habits; without being in any sense a prison, it was secluded and romantic.

The natural features of Selborne cannot be rightly understood without some tincture of geological knowledge. The chalk formation of the south of England comprises the following members:—

[*Tertiaries of London and Hampshire basins.*]

Upper Chalk.	Gault.
Lower Chalk.	Lower Greensand.
Chalk Marl.	Wealden.
Upper Greensand.	[Jurassic.]

The top bed of the upper greensand is a chalky marl, with phosphatic nodules, learnedly styled the chloritic marl. This is the "black malm"[1] of Gilbert White. The upper greensand (white malm) contains beds of hard blue limestone ("ragstone") and sandstone ("firestone"), besides marls. The lower beds are all marly, and pass into the clay of the gault. The gault yields a wet soil, stiff and hard to plough, but excellent agricultural land. This is the "strong loam of Alice Holt," which White describes as "of a miry nature, carrying a good turf, and abounding with oaks that grow to be large timber". The lower greensand, which stretches to the east beyond the gault, forms a picturesque but sterile tract, overgrown with heather, fern and gorse, and dotted with plantations of pines and other trees—the "rascally heaths of Cobbett". White says of Wolmer Forest, which lies on the lower greensand, that it "is nothing but a hungry, sandy, barren waste," and that it had no standing tree in its whole extent. The more elevated parts of the forest have since 1825 been to a considerable extent planted with Scotch fir. The forest is controlled by the War Office and the Department of Woods and Forests, who allow no shooting except pheasant shooting and the firing inevitable during military manœuvres. On certain adjoining estates also the gamekeepers are kept under some restraint. Many birds, such as woodpeckers, fern-owls and herons, are on the increase, and there are hopes

[1] *Malm* seems to be a local synonym of *marl*, a chalky clay.

that Wolmer Forest may become a sanctuary for many creatures which are destroyed without mercy by people who profess to be fond of natural history.

From Wiltshire and Dorsetshire the chalk ranges into Hampshire, Berkshire, Hertfordshire, Kent and Sussex, forming a great expanse of downs with wide curving valleys between. This rather monotonous country is disturbed by the upheaval of the Weald, which brings up a mass of wealden (lower cretaceous) beds in the heart of Surrey, Kent and Sussex. The wealden beds are encircled on all sides but one, where the sea comes in, by chalk hills, the North Downs of Kent and Surrey, the Hog's Back, the Hampshire Downs and the South Downs of Sussex. Between the outer chalk hills, whose steep sides face inwards, and the wealden beds, come on in their order the intermediate formations (upper greensand, gault, lower greensand), all dipping away from the central mass of the Weald. Selborne lies just within the circle of chalk hills. The escarpment of the Hanger, a chalk hill, rises above it, the meadows between the Hanger and the village are underlain by chalk marl; then come the "black malm" or chloritic marl, the ragstones and firestones of the Lythes, Hartley Hanger, Temple Farm, etc., the "white malm" or upper greensand, the gault of Alice Holt, Bin's Wood, Hartley Wood, the Priory Farm, etc., and lastly the lower greensand of Blackmoor and the forest.

The visitor to Selborne can drive over from Alton, making a short stay at Norton Farm, where the old road to Alton, long disused, can be seen. Selborne itself, the church, the Wakes, the Hanger and the Lythe will first be visited. Then he can drive to Blackmoor and Wolmer Pond, Greatham, Liss, Hawkley (the site of the famous landslip of 1774), Empshott, Newton Valence, Farringdon, and so back to Alton. This round brings in many of White's favourite haunts, and gives a good notion of the whole parish. By staying one night at Selborne many other spots, interesting to readers of the *Natural History*, can be brought in. The views from Selborne Hanger and Hawkley Hanger are remarkable, extending far over Hampshire, Surrey and Sussex.

III.—THE HISTORY OF GILBERT WHITE'S BOOK.

The original *Natural History and Antiquities of Selborne*, published in 1789, is a handsome quarto of 468 + 13 pp. and nine plates, mostly after Grimm's drawings. The large folding frontispiece, giving a general view of Selborne, is particularly attractive. Good copies now command high prices.

In 1795, two years after Gilbert White's death, Dr. Aikin, joint author with his sister, Mrs. Barbauld, of the *Evenings at Home*, produced *A Naturalist's Calendar, with Observations in various branches of Natural History, extracted from the papers of the late Rev. Gilbert White, M.A., of Selborne, Hampshire, Senior Fellow of Oriel College, Oxford* (London, B. & J. White, 8vo, pp. 170 + 6). Dr. Aikin, when at Warrington, had published a *Natural History of the Year*, which White notices at the end of his last letter on the *Natural History of Selborne*. The advertisement to the *Naturalist's Calendar* explained that White had left behind him a series of yearly books containing his observations on rural nature between the year 1768 and his death. From these books he had himself extracted what he required for the *History of Selborne*, but some curious facts not selected for publication and all the observations subsequent to 1787 remained untouched. The *Naturalist's Calendar* in its present form is Dr. Aikin's work. He notes that the dates of flowering of plants are chiefly extracted from the book of 1768 alone, and that this was a rather backward year.

White's materials were altogether insufficient for a natural history of the year. Even when supplemented by Markwick's observations made at Catsfield, near Battle, in Sussex, from 1768 to 1793 (and this is the form in which they are usually reprinted), they are merely specimens of this sort of information. I cannot say that I thirst for more. Naturalists are only too prone to draw up registers, which exercise their diligence without taxing their powers of reflection. To learn *why* birds, insects and flowers observe particular seasons would be much, but the mere accumulation of isolated facts has already gone far enough.

In 1802 there appeared in two volumes, 8vo, the *Works in Natural History of the late Rev. G. White*, comprising the *Natural History of Selborne*, the *Naturalist's Calendar*, the *Miscellaneous Observations* and *Markwick's Notes*.

The Natural History and Antiquities, edited by Mitford (4to, 587 + 5 pp. and 12 plates), appeared in 1813.

Rennie's edition (1831) was furnished with notes and figures by the Rev. W. Herbert, Dean of Manchester. Edward Turner Bennett edited an edition of the *Natural History, Antiquities, Calendar* and *Miscellaneous Observations*, which appeared in 1837 (London, 8vo, xxiv + 640 pp., woodcuts by Harvey). The editor died when the book was nearly through the press, and his brother, J. J. Bennett, completed what remained to be done. This edition contains numerous notes by the editor, Bell, Owen, Yarrell and G. Daniell, which are often useful, though too profuse. Bennett's edition was re-edited by Harting in 1875. The next edition of importance was Professor Bell's, in two volumes 8vo, with plates and woodcuts (London, 1877). This edition was very careful and complete; it included all White's published writings; some unpublished notes on natural history; his correspondence; letters by members of his family; four unpublished letters from Linnæus to John White; notes and a memoir by the editor, who had for many years owned and inhabited White's house in Selborne; notes, chiefly on the birds, by Professor Alfred Newton; accounts of the botany and geology of Selborne; a chapter on the Romano-British Antiquities by the late Lord Selborne; a specimen of the *Garden Kalendar*, White's account book, and one of his sermons. Bowdler Sharpe's edition, now in course of publication, contains the *Garden Kalendar*. Other editions, which add little or nothing to our knowledge, either of White or of Selborne, need not be specified; they number altogether eighty or more.

The most attractive and useful of these editions, to those purchasers who cannot command the original, are Bell's and Bennett's. Harting's edition contains not a few good notes. But almost any copy of the *Natural History* is sufficient for use and enjoyment. White owes little to his many editors,

who can but correct mistakes of no great moment, or help to gratify the natural curiosity which seeks to learn something more about so entertaining a writer.

IV.—WHITE'S VIEW OF THE MIGRATION OF BIRDS.[1]

By W. Warde Fowler.

Readers of the *Natural History of Selborne* are naturally surprised to find that throughout the series of letters, *i.e.*, to the end of his life, this most careful observer was never able to free himself entirely from the old belief that birds of the swallow kind do not all leave us in autumn, and that many remain in a torpid state during the winter, hidden away in holes or other convenient winter quarters. His general ideas of migration were indeed sensible enough, and were supported by the observations of his brother John at Gibraltar. He never seems to have doubted that the majority of our summer migrants, the "short-winged birds of passage," as he calls them, leave our shores for the south in autumn, and return again in spring, and he was the first to discover that the ring-ousel is a passing visitor to the south of England both in spring and autumn. But in the case of swallows and martins the traditional idea kept at least an intermittent hold on his mind, and even led him to misinterpret his own careful observations. In Letter LI. to Barrington we find him actually employing some labourers to explore the shrubs and cavities of a spot near Selborne, in which he fancied that the martins might be lying hid.

This loyalty to an old delusion is so remarkable in a man of White's mental acuteness and out-of-door habits that it seems worth while to ask how English ornithologists came by it, and why it was that White was unable to clear his mind of it. Even at the present day it has not entirely disappeared.[2]

[1] On migration in general the reader may consult the article "Migration" in Newton's *Dictionary of Birds*, and for animal hibernation the article "Hibernation" in the *Encyclopædia Britannica*.

[2] See Mr. C. Dixon's *Migration of Birds*, p. 8 f.

If we go back to Aristotle, the father of natural history, we find that he gives a perfectly rational account of migration in general, including that of birds and fishes.[1] The phenomena of migration are indeed sufficiently obvious to the eyes of all observant dwellers on the Mediterranean coasts; and many allusions in ancient literature[2] show that the passage of birds in spring and autumn was familiar to the ordinary Greek and Roman as well as to the learned. But a few pages further on Aristotle goes on to tell us that many birds, and especially those which live at a long distance from warm countries, *i.e.*, in the far north, do not migrate, but "hide themselves" in the cold weather. Many swallows, he says, have been found in the winter so hiding, and entirely without feathers.[3] This, so far as I know, is the first account of the so-called hibernation of birds.

Remembering that Aristotle was born and bred in a city on the Thracian coast, where he might well hear stories coming from the mountainous region to the north, we may perhaps surmise that in this passage we have an echo of that northern folklore which in more recent times, as will be shown directly, has been the origin of the whole misconception. How far Aristotle himself has been responsible for the spread of this misconception it is impossible to say; but considering his immense vogue in the middle ages it is not unlikely that his authority added weight to it. In any case it reappeared in literature, and in an exaggerated form, at the close of the middle ages, and so found its way into the writings of English ornithologists.

Olaus Magnus, Bishop of Upsala in the first half of the sixteenth century, gives an explicit and amusing account of the hibernation of swallows *under water;* and in the copy of his work which lies before me[4] there is a quaint woodcut supposed to represent two fishermen extracting the birds from their winter home with a fishing-net. As this account was reproduced not long afterwards by our own Richard Burton

[1] *Historia Animalium*, viii., 12.
[2] *E.g.*, Homer, *Iliad*, iii., 2; Virgil, *Æneid*, vi., 309.
[3] *Historia Animalium*, viii., 15.
[4] Page 732 of the Basle edition of 1567.

in his *Anatomy of Melancholy*, I cannot do better than quote a few lines from that curious treasure-house of undigested learning :—[1]

"And if I could (I would) observe what becomes of swallows, storks, cranes, cuckowes, nightingales, redstarts, and many other kinds of singing birds, water-fowles, hawkes, etc. Some of them are only seene in summer, some in winter; some are observed in the snow, and at no other times: each have their seasons. In winter not a bird is in Muscovie to bee found, but at the spring in an instant the woods and hedges are full of them, saith Herbastein: how comes it to pass? Doe they sleepe in winter, like Gesner's Alpine mice; *or doe they lie hid (as Olaus affirmes) in the bottome of lakes and rivers, spiritum continentes: often so found by fishermen in Poland and Scandia, two together, mouth to mouth, wing to wing; and when the spring comes they revive againe, or if they bee brought into a stove, or to the fireside.* . . . Or lye they hid in caves, rockes, and hollow trees, as most thinke, in deepe tin-mines or sea-cliffes, as Mr. Carew gives out? I conclude of them all, for my part, as Munster doth of cranes and storkes: whence they come, whither they go, *incompertum adhuc*, as yet we know not."

The Carew here quoted wrote a survey of Cornwall, of which the first edition was published in 1602. As is well known, swallows and martins do occasionally pass the winter in warm places on the Cornish coast; and this fact Carew reports without committing himself to hibernation. But even he was caught by Olaus' wonderful tales, as will be seen in the following passage :—[2]

"In the west parts of Cornwall, during the winter season, swallows are found sitting in old deep tin-works, and holes of the sea cliffes; but touching their lurking-places, Olaus Magnus maketh a far stronger report; for he saith that in the north parts of the world, as summer weareth out, they clap mouth to mouth, wing to wing, and leg to leg, and so after a sweet singing fall down into great lakes or pools amongst the caves, from which whence at the next spring they receive a new

[1] First edition (1628), p. 243.
[2] Page 85 of the reprint edited by Lord de Dunstanville in 1811.

resurrection; and he addeth, for proof thereof, that the fishermen, who make holes in the ice to dip up such fish with their nets as resort thither for breathing, do sometimes light on these swallows, congealed in clods of a shiny substance, and that carrying them home to their stoves, the warmth restoreth them to life and flight. This I have seen confirmed also by the relation of a Venetian ambassador employed in Poland, and heard avowed by travellers in those parts; wherethrough I am induced to give it a place of probability in my mind, and of report in this treatise."

This passage well illustrates the way in which a mischievous legend may spread in an unscientific age through the medium of a single book, like an epidemic from a single spot, and infect the ideas even of sensible observers of nature. Nearly a century later we find that the best ornithologist of his day had not altogether escaped the infection. Willughby, whose *Ornithology* was edited by Ray in English in 1678, wrote thus of the swallows:—[1]

"What becomes of swallows in winter time, whether they fly into other countries, or lie torpid in hollow trees, and the like places, neither are natural historians agreed, nor indeed can we certainly determine. To us it seems more probable that they fly away into hot countries, *viz.*, Egypt, Ethiopia, etc., than that they lurk in hollow trees, or holes of rocks and ancient buildings, or lie in water under the ice, as Olaus Magnus reports."

If Willughby had lived longer and pursued his travels he might have succeeded in stamping out all traces of this infectious myth in England; but he died young, and though disinclined himself to believe it, his language in this passage only served to perpetuate the false tradition.[2] Another century passed, and even then the most acute observer who had yet appeared in England was unable wholly to rid his mind of it. We may well ask how this was: for to anyone accustomed to weigh evidence it will be quite clear that none of the passages quoted above could be said to contain a

[1] Page 211.

[2] Twenty years later Olaus' tales were reproduced in full in Dr. O'Connor's *History of Poland*, vol. ii., p. 85 (1698).

particle of well authenticated fact supporting the theory of hibernation.

The explanation is not difficult for anyone who carefully follows the movements of the swallows and martins before they leave us in the autumn, and then turns to White's letters on the subject of migration, giving them his close attention. These letters are X., XII., XXIII. and XXXVIII. to Pennant, and IX., XII., XVIII., LI. and LV. to Barrington.

Swallows and martins between mid-September and mid-October travel leisurely *in parties* towards and along our south coast. At first, especially if they are following the coast line, these parties consist of large numbers, but they gradually grow smaller and smaller, until only a few stragglers pass at long intervals. But it is by no means easy to discover that these parties are travelling. A stationary observer sees them dallying round his garden, or collecting on his house-roof, like those that have been with him all the summer, and very naturally fails to notice that they are successive parties, which remain for a short while and then go on their way, giving place to others. It may need several hours of close attention to the flocks to convince one that this is so, and the observer should be in a commanding position, and should have the necessary leisure at a time when the migration is in full flow, and the parties numerous and full. White, though he moved about a good deal, never seems to have discovered this movement in parties: his rides along the South Downs never seem to have taken place just at the right time. And thus he also failed to discover the fact that as October advances the parties become smaller and fewer, with long intervals between them, until at last, it may be after an interval of some days, a dozen belated stragglers may appear for a few hours and then vanish, while still later on two or three may possibly be seen for a day or so. These stragglers will probably be late broods from the north of England or Ireland, which for one reason or another have been slow in making their way south.

Now, if the observer have a preconception, as White had, that swallows can go into hiding for the winter, what is more

natural than that he should fancy that these late stragglers are birds which have retired to their place of hibernation somewhere at hand, and which are only enticed out of it once more by genial sunshine in late October or early November? A glance at the letters just mentioned will show that whenever White noticed these late parties, his preconception woke to new life, and interrupted his usually clear mental vision. He took them for the birds of his own village which had gone into hiding and then reappeared. This happened to him on November 3, 1772 (Letter XXVIII. to Pennant), on November 4, 1771 (Letter XII. to Barrington), and again in October and November, 1780 (Letter LV. to Barrington). On this last occasion his preconception became so strong that he affirms his belief that the whole body of martins of his district might be found in "secret dormitories" in some shrubby ground not more than three hundred yards from the village, where he had observed that they were in the habit of roosting in October. Thus a preconception, based on the false tradition handed down to him by Olaus and his followers, led to a misinterpretation of the facts before him; and as those facts were limited for the most part to the range of his observation in his own parish (see above, p. xxiv), it is hardly to be wondered at that the true explanation of them was beyond his reach.

THE NATURAL HISTORY AND ANTIQUITIES OF SELBORNE,

IN THE

COUNTY OF SOUTHAMPTON:

WITH

ENGRAVINGS, AND AN APPENDIX.

— — — " ego Apis Matinæ
" More modoque
" Grata carpentis — — — per laborem
" Plurimum," — — — — — HOR.

" Omnia benè deſcribere, quæ in hoc mundo, a Deo facta, aut Naturæ creatæ viribus,
" elaborata fuerunt, opus eſt non unius hominis, nec unius ævi. Hinc *Faunæ & Floræ*
" utiliſſimæ; hinc *Monographi* præſtantiſſimi." SCOPOLI ANN. HIST. NAT.

LONDON:

PRINTED BY T. BENSLEY;

FOR B. WHITE AND SON, AT HORACE'S HEAD, FLEET STREET.

M,DCC,LXXXIX.

ADVERTISEMENT

TO THE FIRST EDITION

THE Author of the following Letters takes the liberty, with all proper deference, of laying before the public his idea of *parochial history*, which, he thinks, ought to consist of natural productions and occurrences as well as antiquities. He is also of opinion that if stationary men would pay some attention to the districts on which they reside, and would publish their thoughts respecting the objects that surround them, from such materials might be drawn the most complete county-histories, which are still wanting in several parts of this kingdom, and in particular in the county of *Southampton*.

And here he seizes the first opportunity, though a late one, of returning his most grateful acknowledgments to the reverend the President[1] and the reverend and worthy the Fellows of *Magdalen College* in the University of *Oxford*, for their liberal behaviour in permitting their archives to be searched by a member of their own society,[2] so far as the evidences therein contained might respect the parish and priory of *Selborne*. To that gentleman also, and his assistant, whose labours and attention could only be equalled by the very kind manner in which they were bestowed, many and great obligations are also due.

Of the authenticity of the documents above-mentioned there can be no doubt, since they consist of the identical deeds and records that were removed to the College from the Priory at the time of its dissolution; and, being carefully

[1] [Dr. Horne, known by his work on the Psalms.]
[2] [Dr. Richard Chandler.]

copied on the spot, may be depended on as genuine; and, never having been made public before, may gratify the curiosity of the antiquary, as well as establish the credit of the history.

If the writer should at all appear to have induced any of his readers to pay a more ready attention to the wonders of the Creation, too frequently overlooked as common occurrences; or if he should by any means, through his researches, have lent an helping hand towards the enlargement of the boundaries of historical and topographical knowledge; or if he should have thrown some small light upon ancient customs and manners, and especially on those that were monastic; his purpose will be fully answered. But if he should not have been successful in any of these his intentions, yet there remains this consolation behind—that these his pursuits, by keeping the body and mind employed, have, under Providence, contributed to much health and cheerfulness of spirits, even to old age: and, what still adds to his happiness, have led him to the knowledge of a circle of gentlemen whose intelligent communications, as they have afforded him much pleasing information, so, could he flatter himself with a continuation of them, would they ever be deemed a matter of singular satisfaction and improvement.

GIL. WHITE.

Selborne,
January 1st, 1788.

THE

NATURAL HISTORY OF SELBORNE.

LETTER I.

TO THOMAS PENNANT, ESQUIRE.

THE parish of SELBORNE lies in the extreme eastern corner of the county of *Hampshire*, bordering on the county of *Sussex*, and not far from the county of *Surrey*; is about fifty miles south-west of *London*, in latitude 51, and near midway between the towns of *Alton* and *Petersfield*. Being very large and extensive it abuts on twelve parishes, two of which are in *Sussex*, viz. *Trotton* and *Rogate*. If you begin from the south and proceed westward the adjacent parishes are *Emshot, Newton Valence*,[1] *Faringdon, Harteley Mauduit, Great Ward le ham*,[2] *Kingsley, Hedleigh, Bramshot, Trotton, Rogate, Lysse*, and *Greatham*. The soils of this district are almost as various and diversified as the views and aspects. The high part to the south-west consists of a vast hill of chalk, rising three hundred feet above the village; and is divided into a sheep down, the high wood, and a long hanging wood called *The Hanger*. The covert of this eminence is altogether beech, the most lovely of all forest trees, whether we consider it's smooth rind or bark, it's glossy foliage, or graceful pendulous boughs. The down, or sheep-walk, is a pleasing park-like spot, of about one mile by half that space, jutting out on the verge of the hill-country, where it begins to break down into the plains, and commanding a very

[1] "Newton Valence derives its adjunct from William de Valentin, half-brother to Henry III., who held the manor in 1273."—*Moody*. The name in Domesday Book is spelt Newentone.—*Bell*.

[2] [White spells the name thus on theoretical grounds. *Worldham* is the present form.]

engaging view, being an assemblage of hill, dale, wood-lands, heath, and water. The prospect is bounded to the south-east and east by the vast range of mountains called *The Sussex Downs*, by *Guild-down* near *Guildford*, and by the *Downs* round *Dorking* and *Ryegate* in *Surrey*, to the north-east, which altogether, with the country beyond *Alton* and *Farnham*, form a noble and extensive outline.

At the foot of this hill, one stage or step from the uplands, lies the village, which consists of one single straggling street, three quarters of a mile in length, in a sheltered vale, and running parallel with *The Hanger*.[1] The houses are divided from the hill by a vein of stiff clay (good wheat-land), yet stand on a rock of white stone, little in appearance removed from chalk; but seems so far from being calcarious, that it endures extreme heat. Yet that the freestone still preserves somewhat that is analogous to chalk, is plain from the beeches which descend as low as those rocks extend, and no farther, and thrive as well on them, where the ground is steep, as on the chalks.

The cart-way of the village divides, in a remarkable manner, two very incongruous soils. To the south-west is a rank clay, that requires the labour of years to render it mellow; while the gardens to the north-east, and small enclosures behind, consist of a warm, forward, crumbling mould, called *black malm*, which seems highly saturated with vegetable and animal manure; and these may perhaps have been the original site of the town; while the woods and coverts might extend down to the opposite bank.

At each end of the village, which runs from south-east to north-west, arises a small rivulet: that at the north-west end frequently fails; but the other is a fine perennial spring, little influenced by drought or wet seasons, called *Well-head*.[2] This breaks out of some high grounds joining to *Nore Hill*, a noble chalk promon-

[1] [The Hanger and Nore Hill are of chalk; the "vein of stiff clay" consists of chalk marl; the "rock of white stone" belongs to the upper greensand; the "rank clay" is the chalk marl again, while the "black malm" is the chloritic marl, a greenish sand, which forms the top bed of the upper greensand (see the Introduction).]

[2] This spring produced, *September* 14, 1781, after a severe hot summer, and a preceding dry spring and winter, nine gallons of water in a minute, which is five hundred and forty in an hour, and twelve thousand nine hundred and sixty, or two hundred and sixteen hogsheads, in twenty-four hours, or one natural day. At this time many of the wells failed, and all the ponds in the vales were dry.

[One Mr. Mills, since White's time, enclosed the spring by a cast-iron plate bearing a lion's mouth and two windmills. After the centenary celebration of Gilbert White's death, a subscription was made to bring the water from the Well-head stream to stand-pipes in the village.]

tory, remarkable for sending forth two streams into two different seas. The one to the south becomes a branch of the *Arun*, running to *Arundel*, and so falling into the *British* channel: the other to the north,[1] the *Selborne* stream, makes one branch of the *Wey;* and, meeting the *Black-down* stream at *Hedleigh*, and the *Alton* and *Farnham* stream at *Tilford-bridge*, swells into a considerable river, navigable at *Godalming;*[2] from whence it passes to *Guildford*, and so into the *Thames* at *Weybridge;* and thus at the *Nore* into the *German* ocean.

Our wells, at an average, run to about sixty-three feet,[3] and when sunk to that depth seldom fail; but produce a fine limpid water, soft to the taste, and much commended by those who drink the pure element, but which does not lather well with soap.

To the north-west, north and east of the village, is a range of fair enclosures, consisting of what is called a *white malm*,[4] a sort of rotten or rubble stone, which, when turned up to the frost and rain, moulders to pieces, and becomes manure to itself.[5]

Still on to the north-east, and a step lower, is a kind of white land, neither chalk nor clay, neither fit for pasture nor for the plough, yet kindly for hops, which root deep into the freestone, and have their poles and wood for charcoal growing just at hand. This white soil produces the brightest hops.

As the parish still inclines down towards *Wolmer-forest*, at the juncture of the clays and sand[6] the soil becomes a wet, sandy loam, remarkable for timber, and infamous for roads. The oaks of *Temple* and *Blackmoor* stand high in the estimation of purveyors, and have furnished much naval timber; while the trees on the freestone grow large, but are what workmen call *shakey*, and so brittle as often to fall to pieces in sawing. Beyond the sandy

[1] [In orig. there is a full stop at *north*.]

[2] [Artificially navigable, by canal. The distance of the Holt from water-carriage is now still further reduced.]

[3] [The usual depth of the porous upper greensand, which rests upon an impervious stratum, the gault.]

[4] [The upper greensand, which includes the "white land" mentioned below. "Malm," or marl, denotes a clayey bed, the sandstones being locally known as "firestones," or "freestones," and the limestones as "ragstones". The upper greensand is the hop-country of Hampshire.]

[5] This soil produces good wheat and clover.

[6] [Junction of the gault and lower greensand. Temple farm stands on the upper greensand, close to the gault, Blackmoor on the lower greensand. The "hungry lean sand" marks the upper measures of the lower greensand (Folkestone Beds), which are marked in the south-eastern counties by the prevalence of heaths and commons.]

loam the soil becomes an hungry lean sand, till it mingles with the forest; and will produce little without the assistance of lime and turnips.

LETTER II.

TO THE SAME.

In the court of *Norton* farm house, a manor farm to the north-west of the village, on the white malms, stood within these twenty years a *broad-leaved elm*, or *wych hazel*, *ulmus folio latissimo scabro* of *Ray*, which, though it had lost a considerable leading bough in the great storm in the year 1703, equal to a moderate tree, yet, when felled, contained eight loads of timber; and, being too bulky for a carriage, was sawn off at seven feet above the butt, where it measured near eight feet in the diameter. This elm I mention to show to what a bulk *planted elms* may attain; as this tree must certainly have been such from it's situation.

In the centre of the village, and near the church, is a square piece of ground surrounded by houses, and vulgarly called *The Plestor*. In the midst of this spot stood, in old times, a vast oak, with a short squat body, and huge horizontal arms extending almost to the extremity of the area.[1] This venerable tree, surrounded with stone steps, and seats above them, was the delight of old and young, and a place of much resort in summer evenings; where the former sat in grave debate, while the latter frolicked and danced before them. Long might it have stood, had not the amazing tempest in 1703 overturned it at once, to the infinite regret of the inhabitants, and the vicar, who bestowed several pounds in setting it in it's place again: but all his care could not avail; the tree sprouted for a time, then withered and died. This oak I mention to show to what a bulk *planted oaks* also may arrive: and planted this tree must certainly have been, as will appear from what will be said farther concerning this area, when we enter on the antiquities of *Selborne*.

On the *Blackmoor* estate there is a small wood called *Losel*'s, of a few acres, that was lately furnished with a set of oaks of a peculiar growth and great value; they were tall and taper like firs, but standing near together had very small heads, only a little brush without any large limbs. About twenty years ago the

[1] [The site of the oak is now marked by a sycamore of moderate size.]

bridge at the *Toy*, near *Hampton Court*, being much decayed, some trees were wanted for the repairs that were fifty feet long without bough, and would measure twelve inches diameter at the little end. Twenty such trees did a purveyor find in this little wood, with this advantage, that many of them answered the description at sixty feet. These trees were sold for twenty pounds apiece.

In the centre of this grove there stood an oak, which, though shapely and tall on the whole, bulged out into a large excrescence about the middle of the stem. On this a pair of ravens had fixed their residence for such a series of years, that the oak was distinguished by the title of *The Raven-tree*. Many were the attempts of the neighbouring youths to get at this *eyry:* the difficulty whetted their inclinations, and each was ambitious of surmounting the arduous task. But, when they arrived at the swelling, it jutted out so in their way, and was so far beyond their grasp, that the most daring lads were awed, and acknowledged the undertaking to be too hazardous. So the ravens built on, nest upon nest, in perfect security, till the fatal day arrived in which the wood was to be levelled. It was in the month of *February*, when those birds usually sit. The saw was applied to the butt, the wedges were inserted into the opening, the woods echoed to the heavy blows of the beetle or mallet, the tree nodded to it's fall; but still the dam sat on. At last, when it gave way, the bird was flung from her nest; and, though her parental affection deserved a better fate, was whipped down by the twigs, which brought her dead to the ground.

LETTER III.

TO THE SAME.

The fossil-shells of this district, and sorts of stone, such as have fallen within my observation, must not be passed over in silence. And first I must mention, as a great curiosity, a specimen that was plowed up in the chalky fields, near the side of the *Down*, and given to me for the singularity of it's appearance, which, to an incurious eye, seems like a petrified fish of about four inches long, the cardo passing for an head and mouth. It is in reality a *bivalve* of the *Linnæan Genus* of *Mytilus*, and the species of *Crista Galli;* called by *Lister, Rastellum;* by *Rumphius, Ostreum plicatum*

minus; by *D'Argenville, Auris Porci,* s. *Crista Galli;* and by those who make collections *cock's comb.* Though I applied to several such in London, I never could meet with an entire specimen; nor could I ever find in books any engraving from a perfect one. In the superb *museum* at *Leicester-house*[1] permission was given me to examine for this article; and, though I was disappointed as to the fossil, I was highly gratified with the sight of several of the shells themselves in high preservation. This bivalve is only known to inhabit the *Indian* ocean, where it fixes itself to a *zoophyte,* known by the name *Gorgonia.* The curious foldings of the suture the one into the other, the alternate flutings or grooves, and the curved form of my specimen being much easier expressed by the pencil than by words, I have caused it to be drawn and engraved.[2]

Cornua Ammonis[3] are very common about this village. As we were cutting an inclining path up *The Hanger,* the labourers found them frequently on that steep, just under the soil, in the chalk, and of a considerable size. In the lane above *Well-head,* in the way to *Emshot,* they abound in the bank in a darkish sort of marl; and are usually very small and soft: but in *Clay's Pond,* a little farther on, at the end of the pit, where the soil is dug out for manure, I have occasionally observed them of large dimensions, perhaps fourteen or sixteen inches in diameter. But as these did not consist of firm stone, but were formed of a kind of *terra lapidosa,* or hardened clay, as soon as they were exposed to the rains and frost they mouldered away. These seemed as if they were a very recent production. In the chalk-pit, at the north-west end of *The Hanger,* large *nautili* are sometimes observed.

In the very thickest strata of our freestone, and at considerable depths, well-diggers often find large *scallops* or *pectines,* having both shells deeply striated, and ridged and furrowed alternately. They are highly impregnated with, if not wholly composed of, the stone of the quarry.

[1] [The museum at Leicester House was formed by Sir Ashton Lever at Alkrington, near Manchester, and afterwards removed to London. In Letter XVIII. to Barrington, White calls it "the most elegant private museum in Great Britain". It was sold by lottery in 1785, and dispersed by auction in 1806.]

[2] [White's fossil is *Ostrea carinata,* Schloth, a well-known cretaceous species. *Ostrea crista-galli,* L., the cockscomb oyster of the Indian Ocean, is similar, but not identical.]

[3] [Ammonites.]

LETTER IV.

TO THE SAME.

As in a former letter the *freestone*[1] of this place has been only mentioned incidentally, I shall here become more particular.

This stone is in great request for hearth-stones, and the beds of ovens: and in lining of lime-kilns it turns to good account; for the workmen use sandy loam instead of mortar; the sand of which fluxes,[2] and runs by the intense heat, and so cases over the whole face of the kiln with a strong vitrified coat like glass, that it is well preserved from injuries of weather, and endures thirty or forty years. When chiselled smooth, it makes elegant fronts for houses, equal in colour and grain to the *Bath* stone; and superior in one respect, that, when seasoned, it does not scale. Decent chimney-pieces are worked from it of much closer and finer grain than *Portland;* and rooms are floored with it; but it proves rather too soft for this purpose. It is a freestone, cutting in all directions; yet has something of a grain parallel with the horizon, and therefore should not be *surbedded,* but laid in the same position that it grows in the quarry.[3] On the ground abroad this fire-stone will not succeed for pavements, because, probably some degree of saltness prevailing within it, the rain tears the slabs to pieces.[4] Though this stone is too hard to be acted on by vinegar; yet both the white part, and even the *blue rag,* ferments strongly in mineral acids. Though the white stone will not bear wet, yet in every quarry at intervals there are thin strata of *blue rag,*[5] which resist rain and frost; and are excellent for pitching of stables, paths and courts, and for building of dry walls against banks; a valuable species of fencing, much in use in this village, and for mending of roads. This *rag* is rugged and stubborn, and will not hew to a smooth face; but is very dur-

[1] [The sandy beds of the upper greensand.]

[2] There may probably be also in the chalk itself that is burnt for lime a proportion of sand: for few chalks are so pure as to have none.

[3] To *surbed* stone is to set it edgewise, contrary to the posture it had in the quarry, says Dr. *Plot, Oxfordsh.* p. 77. But *surbedding* does not succeed in our dry walls; neither do we use it so in ovens, though he says it is best for *Teynton* stone.

[4] "Firestone is full of salts, and has no sulphur: must be close grained, and "have no interstices. Nothing supports fire like salts; saltstone perishes exposed "to wet and frost."—*Plot's Staff.*, p. 152.

[5] [Calcareous bands of the upper greensand.]

able: yet, as these strata are shallow and lie deep, large quantities cannot be procured but at considerable expense. Among the *blue rags* turn up some blocks tinged with a stain of *yellow* or *rust colour*, which seem to be nearly as lasting as the blue; and every now and then balls of a friable substance, like rust of iron, called *rust balls*.

In *Wolmer Forest* I see but one sort of stone, called by the workmen *sand*, or *forest-stone*.[1] This is generally of the colour of rusty iron, and might probably be worked as iron ore; is very hard and heavy, and of a firm, compact texture, and composed of a small roundish crystalline grit, cemented together by a brown, terrene, ferruginous matter; will not cut without difficulty, nor easily strike fire with steel. Being often found in broad flat pieces, it makes good pavement for paths about houses, never becoming slippery in frost or rain; is excellent for dry walls, and is sometimes used in buildings. In many parts of that waste it lies scattered on the surface of the ground; but is dug on *Weaver's Down*, a vast hill on the eastern verge of that forest, where the pits are shallow, and the stratum thin. This stone is imperishable.

From a notion of rendering their work the more elegant, and giving it a finish, masons chip this stone into small fragments about the size of the head of a large nail; and then stick the pieces into the wet mortar along the joints of their freestone walls: this embellishment carries an odd appearance, and has occasioned strangers sometimes to ask us pleasantly, "whether we fastened our walls together with tenpenny nails".[2]

LETTER V.

TO THE SAME.

Among the singularities of this place the two rocky hollow lanes, the one to *Alton*,[3] and the other to the forest, deserve our attention. These roads, running through the malm lands, are, by the traffick of ages, and the fretting of water, worn down through the first stratum of our freestone, and partly through the second; so

[1] [The Folkestone beds (top of upper greensand).]

[2] [This curious embellishment still exists in some old walls, and notably in the western wall of the church.—*Bell.*]

[3] [Parts of this road, now impassable, are still to be seen at Norton farm.]

that they look more like water-courses than roads; and are bedded with naked *rag* for furlongs together. In many places they are reduced sixteen or eighteen feet beneath the level of the fields; and after floods, and in frosts, exhibit very grotesque and wild appearances, from the tangled roots that are twisted among the strata, and from the torrents rushing down their broken sides; and especially when those cascades are frozen into icicles, hanging in all the fanciful shapes of frost-work. These rugged gloomy scenes affright the ladies when they peep down into them from the paths above, and make timid horsemen shudder while they ride along them; but delight the naturalist with their various botany, and particularly with their curious *filices* with which they abound.

The manor of *Selborne*, was it strictly looked after, with all it's kindly aspects, and all it's sloping coverts, would swarm with game; even now hares, partridges, and pheasants abound; and in old days woodcocks were as plentiful. There are few quails, because they more affect open fields than enclosures; after harvest some few land-rails are seen.

The parish of *Selborne*, by taking in so much of the forest, is a vast district. Those who tread the bounds are employed part of three days in the business, and are of opinion that the outline, in all it's curves and indentings, does not comprise less than thirty miles.

The village stands in a sheltered spot, secured by *The Hanger* from the strong westerly winds. The air is soft, but rather moist from the effluvia of so many trees; yet perfectly healthy and free from agues.

The quantity of rain that falls on it is very considerable, as may be supposed in so woody and mountainous a district. As my experience in measuring the water is but of short date, I am not qualified to give the mean quantity.[1] I only know that

[1] A very intelligent gentleman assures me (and he speaks from upwards of forty years' experience) that the mean rain of any place cannot be ascertained till a person has measured it for a very long period. "If I had only measured the rain," says he, "for the four first years, from 1740 to 1743, I should have said the mean "rain at *Lyndon* was 16½ inch. for the year; if from 1740 to 1750, 18⅓ inches. The "mean rain before 1763 was 20¼; from 1763 and since, 25⅓; from 1770 to 1780, "26. If only 1773, 1774, and 1775 had been measured, *Lyndon* mean rain would "have been called 32 inches."

[The gentleman here alluded to was Thomas Barker, Esq., of Lyndon Hall, in the county of Rutland, Gilbert White's brother-in-law.—*Bell.*

Bell found the average for twenty-five years (1850-1874) to be 32·074 in., which is much above the average for England.]

		Inch.	Hund.
From May 1, 1779, to the end of the year there fell		28	37 !
From Jan. 1, 1780, to Jan. 1, 1781	,,	27	32
From Jan. 1, 1781, to Jan. 1, 1782	,,	30	71
From Jan. 1, 1782, to Jan. 1, 1783	,,	50	26 !
From Jan. 1, 1783, to Jan. 1, 1784	,,	33	71
From Jan. 1, 1784, to Jan. 1, 1785	,,	33	80
From Jan. 1, 1785, to Jan. 1, 1786	,,	31	55
From Jan. 1, 1786, to Jan. 1, 1787	,,	39	57

The village of *Selborne*, and large hamlet of *Oakhanger*, with the single farms, and many scattered houses along the verge of the forest, contain upwards of six hundred and seventy inhabitants.[1] We abound with poor; many of whom are sober and

[1] *A* STATE *of the* Parish *of* SELBORNE, *taken* October 4, 1783.

The number of tenements or families, 136.

The number of inhabitants in the street is 313 } Total, 676: near five inhabitants
In the rest of the parish . . . . 363 } to each tenement.

In the time of the Rev. *Gilbert White*, vicar, who died in 1727-8, the number of inhabitants was computed at about 500.

Average of baptisms for 60 years.

From 1720 to 1729, both years inclus.	Males	6,9	12,9
	Females	6,0	
From 1730 to 1739, both years inclus.	Males	8,2	15,3
	Females	7,1	
From 1740 to 1749, incl.	Males	9,2	15,8
	Females	6,6	
From 1750 to 1759, incl.	Males	7,6	15,7
	Females	8,1	
From 1760 to 1769, incl.	Males	9,1	18,0
	Females	8,9	
From 1770 to 1779, incl.	Males	10,5	20,3
	Females	9,8	

Total of baptisms of Males, 515 } 980
,, ,, Females, 465 }

Total of baptisms from 1720 to 1779, both inclusive . . . 60 years . . . 980.

Average of burials for 60 years.

From 1720 to 1729, both years inclus.	Males	4,8	9,9
	Females	5,1	
From 1730 to 1739, both years inclus.	Males	4,8	10,6
	Females	5,8	
From 1740 to 1749, incl.	Males	4,6	8,4
	Females	3,8	
From 1750 to 1759, incl.	Males	4,9	10,0
	Females	5,1	
From 1760 to 1769, incl.	Males	6,9	13,4
	Females	6,5	
From 1770 to 1779, incl.	Males	5,5	11,7
	Females	6,2	

Total of burials of Males, 315 } 640
,, ,, Females, 325 }

industrious, and live comfortably in good stone or brick cottages, which are glazed, and have chambers above stairs: mud buildings we have none. Besides the employment from husbandry, the men work in hop gardens, of which we have many; and fell and bark timber. In the spring and summer the women weed the corn; and enjoy a second harvest in September by hop picking. Formerly, in the dead months they availed themselves greatly by spinning wool, for making of *barragons*, a genteel corded stuff, much in vogue at that time for summer wear; and chiefly manufactured at *Alton*, a neighbouring town, by some of the people called Quakers: but from circumstances this trade is at

Total of burials from 1720 to 1779, both inclusive . . . 60 years . . . 640.
Baptisms exceed burials by more than one third.
Baptisms of Males exceed Females by one tenth, or one in ten.
Burials of Females exceed Males by one in thirty.
It appears that a child, born and bred in this parish, has an equal chance to live above forty years.
Twins thirteen times, many of whom dying young have lessened the chance for life.
Chances for life in men and women appear to be equal.

A TABLE *of the* Baptisms, Burials, *and* Marriages, *from* January, 2, 1761, *to* December 25, 1780, *in the* Parish *of* SELBORNE.

	BAPTISMS.			BURIALS.			MAR.
	M.	F.	Tot.	M.	F.	Tot.	
1761.	8	10	18	2	4	6	3
1762.	7	8	15	10	14	24	6
1763.	8	10	18	3	4	7	5
1764.	11	9	20	10	8	18	6
1765.	12	6	18	9	7	16	6
1766.	9	13	22	10	6	16	4
1767.	14	5	19	6	5	11	2
1768.	7	6	13	2	5	7	6
1769.	9	14	23	6	5	11	2
1770.	10	13	23	4	7	11	3
1771.	10	6	16	3	4	7	4
1772.	11	10	21	6	10	16	3
1773.	8	5	13	7	5	12	3
1774.	6	13	19	2	8	10	1
1775.	20	7	27	13	8	21	6
1776.	11	10	21	4	6	10	6
1777.	8	13	21	7	3	10	4
1778.	7	13	20	3	4	7	5
1779.	14	8	22	5	6	11	5
1780.	8	9	17	11	4	15	3
	198	188	386	123	123	246	83

During this period of twenty years the births of males exceeded those of females . . . 10.
The burials of each sex were equal.
And the births exceeded the deaths . . . 140.

an end.[1] The inhabitants enjoy a good share of health and longevity; and the parish swarms with children.

LETTER VI.

TO THE SAME.

SHOULD I omit to describe with some exactness the *forest* of *Wolmer*, of which three fifths perhaps lie in this parish, my account of *Selborne* would be very imperfect, as it is a district abounding with many curious productions, both animal and vegetable; and has often afforded me much entertainment both as a sportsman and as a naturalist.

The royal *forest* of *Wolmer* is a tract of land of about seven miles in length, by two and a half in breadth, running nearly from North to South, and is abutted on, to begin to the South, and so to proceed eastward, by the parishes of *Greatham*, *Lysse*, *Rogate*, and *Trotton*, in the county of *Sussex;* by *Bramshot*, *Hedleigh*, and *Kingsley*. This royalty consists entirely of sand covered with heath and fern; but is somewhat diversified with hills and dales, without having one standing tree in the whole extent.[2] In the bottoms, where the waters stagnate, are many bogs, which formerly abounded with subterraneous trees; though Dr. *Plot* says positively,[3] that "there never were any fallen trees hidden "in the mosses of the southern counties". But he was mistaken: for I myself have seen cottages on the verge of this wild district, whose timbers consisted of a black hard wood, looking like oak, which the owners assured me they procured from the bogs by probing the soil with spits, or some such instruments: but the peat is so much cut out, and the moors have been so well examined, that none has been found of late.[4] Besides the oak, I

[1] Since the passage above was written, I am happy in being able to say that the spinning employment is a little revived, to the no small comfort of the industrious housewife.

[2] [Much of Wolmer Forest is now enclosed and planted.]

[3] See his Hist. of *Staffordshire*.

[4] Old people have assured me, that on a winter's morning they have discovered these trees, in the bogs, by the hoar frost, which lay longer over the space where they were concealed, than on the surrounding morass. Nor does this seem to be a fanciful notion, but consistent with true philosophy. Dr. *Hales* saith, "That the "warmth of the earth, at some depth under ground, has an influence in promoting "a thaw, as well as the change of the weather from a freezing to a thawing state, "is manifest, from this observation, viz., Nov. 29, 1731, a little snow having "fallen in the night, it was, by eleven the next morning, mostly melted away on the

have also been shown pieces of fossil-wood of a paler colour, and softer nature, which the inhabitants called fir: but, upon a nice examination, and trial by fire, I could discover nothing resinous in them; and therefore rather suppose that they were parts of a willow or alder, or some such aquatic tree.

This lonely domain is a very agreeable haunt for many sorts of wild fowls, which not only frequent it in the winter, but breed there in the summer; such as lapwings, snipes, wild-ducks, and, as I have discovered within these few years, teals. Partridges in vast plenty are bred in good seasons on the verge of this forest, into which they love to make excursions: and in particular, in the dry summer of 1740 and 1741, and some years after, they swarmed to such a degree that parties of unreasonable sportsmen killed twenty and sometimes thirty brace in a day.

But there was a nobler species of game in this forest, now extinct, which I have heard old people say abounded much before shooting flying became so common, and that was the *heath-cock, black game,* or *grouse.* When I was a little boy I recollect one coming now and then to my father's table. The last pack remembered was killed about thirty-five years ago; and within these ten years one solitary *grey hen* was sprung by some beagles in beating for a hare. The sportsmen cried out, "A hen pheasant"; but a gentleman present, who had often seen grouse in the north of England, assured me that it was a greyhen.[1]

Nor does the loss of our black game prove the only gap in the *Fauna Selborniensis;* for another beautiful link in the chain of beings is wanting, I mean the *red deer,* which toward the beginning of this century amounted to about five hundred head,

"surface of the earth, except in several places in *Bushy-park,** where there were "*drains* dug and covered with earth, on which the snow continued to lie, whether "those drains were full of water or dry; as also where *elm-pipes* lay under ground: "a plain proof this, that those drains intercepted the warmth of the earth from "ascending from greater depths below them: for the snow lay where the drain had "more than four feet depth of earth over it. It continued also to lie on thatch, "tiles, and the tops of walls." See *Hales's* Hæmastatics: p. 360. Quere: might not such observations be reduced to domestic use, by promoting the discovery of old obliterated drains and wells about houses; and in Roman stations and camps lead to the finding of pavements, baths and graves, and other hidden relics of curious antiquity?

* [In orig. *Bushy* is misprinted *Busby*.]

1 [*Tetrao tetrix.* L. Bell (1877) notes that this grouse is still occasionally met with at Wolmer, and this not as the result of any recent importation from other localities, but as a voluntary visitant. From Hampshire westwards to Exmoor it may still be found in suitable places.]

and made a stately appearance. There is an old keeper, now alive, named *Adams*, whose great grandfather (mentioned in a perambulation taken in 1635), grandfather, father and self, enjoyed the head keepership of *Wolmer forest* in succession for more than an hundred years. This person assures me, that his father has often told him, that Queen *Anne*, as she was journeying on the *Portsmouth* road, did not think the forest of *Wolmer* beneath her royal regard. For she came out of the great road at *Lippock*, which is just by, and, reposing herself on a bank smoothed for that purpose, lying about half a mile to the east of *Wolmer-pond*, and still called *Queen's-bank*, saw with great complacency and satisfaction the whole herd of red deer brought by the keepers along the vale before her, consisting then of about five hundred head. A sight this worthy the attention of the greatest sovereign! But he further adds that, by means of the *Waltham blacks*, or, to use his own expression, as soon as they began *blacking*, they were reduced to about fifty head, and so continued decreasing till the time of the late Duke of *Cumberland*. It is now more than thirty years ago that his highness sent down an huntsman, and six yeomen-prickers, in scarlet jackets laced with gold, attended by the stag-hounds; ordering them to take every deer in this forest alive, and convey them in carts to *Windsor*. In the course of the summer they caught every stag, some of which showed extraordinary diversion: but, in the following winter, when the hinds were also carried off, such fine chases were exhibited as served the country people for matter of talk and wonder for years afterwards. I saw myself one of the yeomen-prickers single out a stag from the herd, and must confess that it was the most curious feat of activity I ever beheld, superior to anything in Mr. *Astley's* riding-school. The exertions made by the horse and deer much exceeded all my expectations; though the former greatly excelled the latter in speed. When the devoted deer was separated from his companions, they gave him, by their watches, law, as they called it, for twenty minutes; when, sounding their horns, the stop-dogs were permitted to pursue, and a most gallant scene ensued.[1]

[1] [See "Hounds" in Observations on Quadrupeds.]

LETTER VII.

TO THE SAME.

THOUGH large herds of deer do much harm to the neighbourhood, yet the injury to the morals of the people is of more moment than the loss of their crops. The temptation is irresistible; for most men are sportsmen by constitution: and there is such an inherent spirit for hunting in human nature, as scarce any inhibitions can restrain. Hence, towards the beginning of this century all this country was wild about deer-stealing. Unless he was a *hunter*, as they affected to call themselves, no young person was allowed to be possessed of manhood or gallantry. The *Waltham blacks* at length committed such enormities, that government was forced to interfere with that severe and sanguinary act called the *black act*,[1] which now comprehends more felonies than any law that ever was framed before. And, therefore, a late bishop of *Winchester*, when urged to re-stock *Waltham chase*,[2] refused, from a motive worthy of a prelate, replying that "it had done mischief enough already".

Our old race of deer-stealers are hardly extinct yet: it was but a little while ago that, over their ale, they used to recount the exploits of their youth; such as watching the pregnant hind to her lair, and, when the calf was dropped, paring its feet with a penknife to the quick to prevent it's escape, till it was large and fat enough to be killed; the shooting at one of their neighbours with a bullet in a turnip-field by moonshine, mistaking him for a deer; and the losing a dog in the following extraordinary manner:—Some fellows, suspecting that a calf new-fallen was deposited in a certain spot of thick fern, went, with a lurcher, to surprise it; when the parent-hind rushed out of the brake, and, taking a vast spring with all her feet close together, pitched upon the neck of the dog, and broke it short in two.

Another temptation to idleness and sporting was a number of rabbits, which possessed all the hillocks and dry places: but these being inconvenient to the huntsmen, on account of their burrows, when they came to take away the deer, they permitted the country people to destroy them all.

Such forests and wastes, when their allurements to irregularities

[1] Statute 9 *Geo.* I. c. 22.

[2] This chase remains un-stocked to this day; the bishop was Dr. *Hoadly*.

are removed, are of considerable service to neighbourhoods that verge upon them, by furnishing them with peat and turf for their firing; with fuel for the burning their lime; and with ashes for their grasses; and by maintaining their geese and their stock of young cattle at little or no expense.

The manor-farm of the parish of *Greatham* has an admitted claim, I see, (by an old record taken from the *Tower of London*) of turning all live stock on the forest, at proper seasons, *bidentibus exceptis.*[1] The reason, I presume, why sheep[2] are excluded, is, because, being such close grazers, they would pick out all the finest grasses, and hinder the deer from thriving.

Though (by statute 4 and 5 *W.* and *Mary*, c. 23) "to burn on "any waste, between *Candlemas* and *Midsummer*, any grig, ling, "heath and furze, goss or fern, is punishable with whipping and "confinement in the house of correction"; yet, in this forest, about *March* or *April*, according to the dryness of the season, such vast heath-fires are lighted up, that they often get to a masterless head, and, catching the hedges, have sometimes been communicated to the underwoods, woods, and coppices, where great damage has ensued. The plea for these burnings is, that, when the old coat of heath, &c., is consumed, young will sprout up, and afford much tender brouze for cattle; but, where there is large old furze, the fire, following the roots, consumes the very ground; so that for hundreds of acres nothing is to be seen but smother and desolation, the whole circuit round looking like the cinders of a volcano; and, the soil being quite exhausted, no traces of vegetation are to be found for years. These conflagrations, as they take place usually with a north-east or east wind, much annoy this village with their smoke, and often alarm the country; and, once in particular, I remember that a gentleman, who lives beyond *Andover*, coming to my house, when he got on the downs between that town and *Winchester*, at twenty-five miles' distance, was surprised much with smoke and a hot smell of fire; and concluded that *Alresford* was in flames; but, when he came to that town, he then had apprehensions for the next village, and so on to the end of his journey.

On two of the most conspicuous eminences of this forest stand two *arbours* or *bowers*, made of the boughs of oaks; the one called

[1] For this privilege the owner of that estate used to pay to the king annually seven bushels of oats.

[2] In *The Holt*, where a full stock of fallow-deer has been kept up till lately, no sheep are admitted to this day.

Waldon-lodge, the other *Brimstone-lodge:* these the keepers renew annually on the feast of St. *Barnabas,* taking the old materials for a perquisite. The farm called *Blackmoor,* in this parish, is obliged to find the posts and brush-wood for the former; while the farms at *Greatham,* in rotation, furnish for the latter; and are all enjoined to cut and deliver the materials at the spot. This custom I mention, because I look upon it to be of very remote antiquity.

LETTER VIII.

TO THE SAME.

On the verge of the forest, as it is now circumscribed, are three considerable lakes, two in *Oakhanger,* of which I have nothing particular to say; and one called *Bin's,* or *Bean's pond,*[1] which is worthy the attention of a naturalist or a sportsman. For, being crowded at the upper end with willows, and with the *carex cespitosa,*[2] it affords such a safe and pleasing shelter to wild ducks, teals, snipes, &c. that they breed there. In the winter this covert is also frequented by foxes, and sometimes by pheasants; and the bogs produce many curious plants (for which consult Letter XLII. to Mr. *Barrington*).

By a *perambulation* of *Wolmer forest* and *The Holt,* made in 1635, and in the eleventh year of *Charles* the First (which now lies before me), it appears that the limits of the former are much circumscribed. For, to say nothing of the farther side, with which I am not so well acquainted, the bounds on this side, in old times, came into *Binswood;* and extended to the ditch of *Ward le ham-park,* in which stands the curious mount called *King John's Hill,* and *Lodge Hill;* and to the verge of *Hartley Mauduit,* called *Mauduit-hatch;* comprehending also *Short-heath, Oakhanger,* and *Oakwoods;* a large district, now private property, though once belonging to the royal domain.

It is remarkable that the term *purlieu* is never once mentioned in this long roll of parchment. It contains, besides the *perambulation,* a rough estimate of the value of the timbers, which were

[1] [Now drained. The covert has disappeared.]

[2] I mean that sort which, rising into tall hassocks, is called by the foresters *torrets;* a corruption, I suppose, of turrets.

Note. In the beginning of the summer 1787 the royal forests of *Wolmer* and *Holt* were measured by persons sent down by government.

considerable, growing at that time in the district of *The Holt;* and enumerates the officers, superior and inferior, of those joint forests, for the time being, and their ostensible fees and perquisites. In those days, as at present, there were hardly any trees in *Wolmer forest.*

Within the present limits of the forest are three considerable lakes, *Hogmer, Cranmer,* and *Wolmer;* all of which are stocked with carp, tench, eels, and perch: but the fish do not thrive well, because the water is hungry, and the bottoms are a naked sand.[1]

A circumstance respecting these ponds, though by no means peculiar to them, I cannot pass over in silence; and that is, that instinct by which in summer all the kine, whether oxen, cows, calves, or heifers, retire constantly to the water during the hotter hours; where, being more exempt from flies, and inhaling the coolness of that element, some belly deep, and some only to mid-leg, they ruminate and solace themselves from about ten in the morning till four in the afternoon, and then return to their feeding. During this great proportion of the day they drop much dung, in which insects nestle; and so supply food for the fish, which would be poorly subsisted but from this contingency. Thus Nature, who is a great economist, converts the recreation of one animal to the support of another! *Thomson,* who was a nice observer of natural occurrences, did not let this pleasing circumstance escape him. He says, in his *Summer,*

> "A various group the herds and flocks compose:
> "———————— on the grassy bank
> "Some ruminating lie; while others stand
> "Half in the flood, and, often bending, sip
> "The circling surface."

Wolmer-pond, so called, I suppose, for eminence sake, is a vast lake for this part of the world, containing, in it's whole circumference, 2,646 yards, or very nearly a mile and an half. The length of the north-west and opposite side is about 704 yards, and the breadth of the south-west end about 456 yards. This measurement, which I caused to be made with good exactness, gives an area of about sixty-six acres, exclusive of a large irregular arm at the north-east corner, which we did not take into the reckoning.

[1][It is remarkable that these three ponds are named respectively after three animals which, formerly indigenous in this country, are now extinct. *Hogmer* after the wild boar, *Cranmer* after the crane, and *Wolmer,* anciently Wolvemere, after the wolf, which doubtless formerly haunted this wild district. The fish mentioned in the text are now, I believe, quite extinct in these ponds.—*Bell.*]

On the face of this expanse of waters, and perfectly secure from fowlers, lie all day long, in the winter season, vast flocks of ducks, teals, and widgeons, of various denominations; where they preen and solace, and rest themselves, till towards sun-set, when they issue forth in little parties (for in their natural state they are all birds of the night) to feed in the brooks and meadows; returning again with the dawn of the morning. Had this lake an arm or two more, and were it planted round with thick covert (for now it is perfectly naked), it might make a valuable decoy.

Yet neither it's extent, nor the clearness of it's water, nor the resort of various and curious fowls, nor it's picturesque groups of cattle, can render this *meer* so remarkable as the great quantity of coins that were found in it's bed about forty years ago. But, as such discoveries more properly belong to the *antiquities* of this place, I shall suppress all particulars for the present, till I enter professedly on my series of letters respecting the more remote history of this village and district.

LETTER IX.

TO THE SAME.

By way of supplement, I shall trouble you once more on this subject, to inform you that *Wolmer*, with her sister forest *Ayles Holt*, alias *Alice Holt*,[1] as it is called in old records, is held by grant from the crown for a term of years.

The grantees that the author remembers are Brigadier-General *Emanuel Scroope Howe*, and his lady, *Ruperta*, who was a natural daughter of Prince *Rupert* by *Margaret Hughs;* a Mr. *Mordaunt*, of the *Peterborough* family, who married a dowager lady *Pembroke; Henry Bilson Legge* and lady; and now Lord *Stawel*, their son.

The lady of General *Howe* lived to an advanced age, long surviving her husband; and, at her death, left behind her many curious pieces of mechanism of her father's constructing, who was a distinguished mechanic and artist,[2] as well as warrior;

[1] "In Rot. Inquisit. de statu forest. in Scaccar. 36. Ed. 3. it is called *Aisholt.*" In the same, "Tit. *Woolmer* and *Aisholt* Hantisc. Dominus Rex habet unam "capellam in *haia* suâ de Kingesle". "*Haia, sepes, sepimentum, parcus:* a Gall. *haie* and *haye.*" Spelman's Glossary.

[2] This prince was the inventor of *mezzotinto.* [Not the inventor, who was Ludwig von Siegen, but the introducer of mezzotint into England.]

and, among the rest, a very complicated clock, lately in possession of Mr. *Elmer*, the celebrated game-painter at *Farnham*, in the county of *Surrey*.

Though these two forests are only parted by a narrow range of enclosures, yet no two soils can be more different: for *The Holt* consists of a strong loam, of a miry nature, carrying a good turf, and abounding with oaks that grow to be large timber; while *Wolmer* is nothing but a hungry, sandy, barren waste.[1]

The former, being all in the parish of *Binsted*, is about two miles in extent from north to south, and near as much from east to west; and contains within it many woodlands and lawns, and the *great lodge* where the grantees reside; and a smaller lodge, called *Goose-green;* and is abutted on by the parishes of *Kingsley, Frinsham, Farnham*, and *Bentley;* all of which have right of common.

One thing is remarkable; that, though *The Holt* has been of old well stocked with fallow-deer, unrestrained by any pales or fences more than a common hedge, yet they were never seen within the limits of *Wolmer;* nor were the red deer of *Wolmer* ever known to haunt the thickets or glades of *The Holt*.

At present the deer of *The Holt* are much thinned and reduced by the night-hunters, who perpetually harass them in spite of the efforts of numerous keepers, and the severe penalties that have been put in force against them as often as they have been detected, and rendered liable to the lash of the law. Neither fines nor imprisonments can deter them: so impossible is it to extinguish the spirit of sporting, which seems to be inherent in human nature.

General *Howe* turned out some *German* wild boars and sows in his forests, to the great terror of the neighbourhood; and, at one time, a wild bull or buffalo: but the country rose upon them and destroyed them.

A very large fall of timber, consisting of about one thousand oaks, has been cut this spring (viz. 1784) in *The Holt forest;* one fifth of which, it is said, belongs to the grantee, Lord *Stawel*. He lays claim also to the lop and top: but the poor of the parishes of *Binsted* and *Frinsham, Bentley* and *Kingsley*, assert that it belongs to them; and, assembling in a riotous manner, have actually taken it all away. One man, who keeps a team, has carried home, for his share, forty stacks of wood. Forty-

[1] [Alice Holt lies upon gault, Wolmer on lower greensand.]

five of these people his lordship has served with actions. These trees, which were very sound, and in high perfection, were *winter-cut*, viz. in *February* and *March*, before the bark would run. In old times *The Holt* was estimated to be eighteen miles, computed measure, from water-carriage, *viz.* from the town of *Chertsey*, on the *Thames;* but now it is not half that distance, since the *Wey* is made navigable up to the town of *Godalming* in the county of *Surrey*.

LETTER X.[1]

TO THE SAME.

August 4, 1767.

It has been my misfortune never to have had any neighbours whose studies have led them towards the pursuit of natural knowledge: so that, for want of a companion to quicken my industry and sharpen my attention, I have made but slender progress in a kind of information to which I have been attached from my childhood.

As to *swallows* (*hirundines rusticæ*) being found in a torpid state during the winter in the isle of *Wight*, or any part of this country, I never heard any such account worth attending to. But a clergyman, of an inquisitive turn, assures me, that, when he was a great boy, some workmen, in pulling down the battlements of a church tower early in the spring, found two or three *swifts* (*hirundines apodes*)[2] among the rubbish, which were, at first appearance, dead; but, on being carried toward the fire, revived.

[1] [The original of this letter, the first ever written to Pennant by Gilbert White, commences with the following passage, omitted in the copy as sent to the printer:—

"Nothing but the obliging notice which you were so kind as to take of my trifling observations in the natural way when I was in town in the spring, and your repeated mention of me in some late letters to my brother, could have emboldened me to enter into a correspondence with you, in which, though my vanity cannot suggest to me that I shall send any information worthy your attention, yet the communication of my thoughts to a gentleman so distinguished for these kinds of studies will unavoidably be attended with satisfaction and improvement on my side." At this time so little was he acquainted with Pennant, that he did not know his Christian name, and the letter is addressed "To —— Pennant, Esq., at Downing, in Flintshire, North Wales."—*Bell.*]

[2] [It has been suggested that these supposed swifts were really bats, which is not impossible. No swift has ever been known to pass the winter in this country.]

He told me that, out of his great care to preserve them, he put them in a paper-bag, and hung them by the kitchen fire, where they were suffocated.

Another intelligent person has informed me that, while he was a schoolboy at *Brighthelmstone,* in *Sussex,* a great fragment of the chalk-cliff fell down one stormy winter on the beach; and that many people found *swallows* among the rubbish: but, on my questioning him whether he saw any of those birds himself; to my no small disappointment, he answered me in the negative; but that others assured him they did.

Young broods of *swallows* began to appear this year on *July* the 11th, and young *martins* (*hirundines urbicæ*) were then fledged in their nests. Both species will breed again once. For I see by my *fauna* of last year, that young broods came forth so late as *September* the eighteenth. Are not these late hatchings more in favour of hiding than migration? Nay, some young martins remained in their nests last year so late as *September* the twenty-ninth; and yet they totally disappeared with us by the fifth of *October.*

How strange is it that the *swift,* which seems to live exactly the same life with the *swallow* and *house-martin,* should leave us before the middle of *August* invariably! while the latter stay often till the middle of *October;* and once I saw numbers of house-martins on the seventh of *November.*[1] The martins and *red-wing fieldfares* were flying in sight together; an uncommon assemblage of summer and winter-birds!

A little yellow bird (it is either a species of the *alauda trivialis,* or rather perhaps of the *motacilla trochilus*) still continues to make a sibilous shivering noise in the tops of tall woods.[2] The *stoparola* of *Ray* (for which we have as yet no name in these parts) is called, in your *Zoology,* the *fly-catcher.* There is one circumstance characteristic of this bird, which seems to have escaped observation, and that is, that it takes it's stand on the top of some stake or post, from whence it springs forth on it's prey, catching a fly

[1] [Later instances are recorded: White mentions one in Letter XI. to Pennant.]

[2] [See below (Letters XVI. and XIX. to Pennant). The "little yellow bird" was undoubtedly the wood-wren (*Phylloscopus sibilatrix,* Bechst.). In this sentence the word *species* seems to be loosely used: in its technical sense it is rare in White's writings. The *alauda trivialis* was (and is) the tree-pipit; the *motacilla trochilus* was the willow-wren (*Phylloscopus trochilus,* L.). All that White meant to say was that the little yellow bird might be closely related to either of these; he had probably as yet not seen it clearly, or he would not have compared it to the tree-pipit.]

in the air, and hardly ever touching the ground, but returning still to the same stand for many times together.

I perceive there are more than one species of the *motacilla trochilus:* Mr. *Derham* supposes, in *Ray's Philos. Letters,* that he has discovered three. In these there is again an instance of some very common birds that have as yet no *English* name.

Mr. *Stilling fleet* makes a question whether the *black-cap* (*motacilla atricapilla*) be a bird of passage or not: I think there is no doubt of it: for, in *April,* in the first fine weather, they come trooping, all at once, into these parts, but are never seen in the winter. They are delicate songsters.

Numbers of *snipes* breed every summer in some moory ground on the verge of this parish. It is very amusing to see the cock bird on wing at that time, and to hear his piping and humming notes.[1]

I have had no opportunity yet of procuring any of those mice which I mentioned to you in town. The person that brought me the last says they are plenty in harvest, at which time I will take care to get more; and will endeavour to put the matter out of doubt, whether it be a non-descript species or not.[2]

I suspect much there may be two species of water-rats. *Ray* says, and *Linnæus* after him, that the water-rat is web-footed behind. Now I have discovered a rat on the banks of our little stream that is not web-footed, and yet is an excellent swimmer and diver: it answers exactly to the *mus amphibius* of *Linnæus* (See *Syst. Nat.*), which he says "*natat in fossis & urinatur*".[3] I should be glad to procure one "*plantis palmatis*". *Linnæus* seems to be in a puzzle about his *mus amphibius,* and to doubt whether it differs from his *mus terrestris;* which if it be, as he allows, the "*mus agrestis capite grandi brachyuros*" of *Ray,* is widely different from the water-rat, both in size, make, and manner of life.

[1] [See Letters XVI. and XXXIX. to Pennant.]

[2] [This is the first mention of the harvest-mouse (*Mus minutus,* Pall.). Pennant inserted the species from White's description in the Appendix to his *British Zoology,* 8vo ed., 1768. The harvest-mouse has been known to weave its nest from the panicles and leaves of the common reed. Bingley observed that, when kept in a cage, it hid away grains of maize, taking care to bite out the embryo, as the harvesting ants also do. Although well supplied with food, it devoured most of the grains in the following November. See also Letters XII., XIII., XV. to Pennant.]

[3] [The water-vole (*Arvicola amphibia,* L.). Linnæus followed Willughby and Ray in saying (erroneously) that the hind feet are webbed. The *mus terrestris* of Linnæus is the common field-vole (*Arvicola agrestis,* L.).]

As to the *falco*,[1] which I mentioned in town, I shall take the liberty to send it down to you into *Wales;* presuming on your candour, that you will excuse me if it should appear as familiar to you as it is strange to me. Though mutilated "*qualem dices . . . antehac fuisse, tales cum sint reliquiæ!*"

It haunted a marshy piece of ground in quest of wild-ducks and snipes: but, when it was shot, had just knocked down a rook, which it was tearing in pieces. I cannot make it answer to any of our *English* hawks; neither could I find any like it at the curious exhibition of stuffed birds in *Spring-Gardens.* I found it nailed up at the end of a barn, which is the country-man's museum.

The parish I live in is a very abrupt, uneven country, full of hills and woods, and therefore full of birds.

LETTER XI.

TO THE SAME.

Selborne, September 9, 1767.

It will not be without impatience that I shall wait for your thoughts with regard to the *falco;* as to it's weight, breadth, &c. I wish I had set them down at the time: but, to the best of my remembrance, it weighed two pounds and eight ounces, and measured, from wing to wing, thirty-eight inches. It's *cere* and feet were yellow, and the circle of it's eyelids a bright yellow. As it had been killed some days, and the eyes were sunk, I could make no good observation on the colour of the pupils and the *irides.*

The most unusual birds I ever observed in these parts were a pair of *hoopoes* (*upupa*), which came several years ago in the summer, and frequented an ornamented piece of ground, which joins to my garden, for some weeks. They used to march about in a stately manner, feeding in the walks, many times in the day; and seemed disposed to breed in my outlet;[2] but were frighted and persecuted by idle boys, who would never let them be at rest.

[1] [See Letter XI. and the beginning of Letter XII. It is curious that White should leave us in the dark about this falcon. It seems that Pennant identified it as a variety of the peregrine.]

[2] [By *outlet* White denotes the pleasure-grounds about a house.]

Three *gross-beaks* (*loxia coccothraustes*) appeared some years ago in my fields, in the winter; one of which I shot: since that, now and then one is occasionally seen in the same dead season.

A *cross-bill* (*loxia curvirostra*) was killed last year in this neighbourhood.

Our streams, which are small, and rise only at the end of the village, yield nothing but the *bull's head* or *miller's thumb* (*gobius fluviatilis capitatus*),[1] the *trout* (*trutta fluviatilis*),[2] the *eel* (*anguilla*), the *lampern* (*lampœtra parva*[3] *et fluviatilis*,[4] and the *stickle-back* (*pisciculus aculeatus*).[5]

We are twenty miles from the sea, and almost as many from a great river, and therefore see but little of sea-birds. As to wild fowls, we have a few teams of *ducks* bred in the moors where the snipes breed; and multitudes of *widgeons* and *teals* in hard weather frequent our lakes in the forest.

Having some acquaintance with a tame *brown owl*, I find that it casts up the fur of mice, and the feathers of birds in pellets, after the manner of hawks: when full, like a dog, it hides what it cannot eat.

The young of the barn-owl are not easily raised, as they want a constant supply of fresh mice: whereas the young of the brown owl will eat indiscriminately all that is brought; snails, rats, kittens, puppies, magpies, and any kind of carrion or offal.

The house-martins have eggs still, and squab-young. The last swift I observed was about the twenty-first of *August;* it was a straggler.

Red-starts, fly-catchers, white-throats, and *reguli non cristati*,[6] still appear; but I have seen no *black-caps* lately.

I forgot to mention that I once saw, in *Christ Church* college quadrangle in *Oxford*, on a very sunny warm morning, a *house martin* flying about, and settling on the parapets, so late as the twentieth of *November*.

At present I know only two species of *bats*, the common *vespertilio murinus* and the *vespertilio auritus*.[7]

[1] [*Cottus gobio*, L.] [2] [*Salmo fario*, L.]
[3] [*Petromyzon branchialis*, L.] [4] [*P. fluviatilis*, L.]
[5] [Of the five or six species of stickleback described as British one only was known to Bell as inhabiting the stream at Selborne, *viz.*, the three-spined stickleback (*Gastrosteus aculeatus*, L.).]
[6] [The three species of willow-wren.]
[7] [The *Vespertilio murinus* is a common bat on the continent, but very rare in Britain. White meant no doubt the *Pipistrelle*, as former editors have seen; Pennant led him astray on this point. *Plecotus auritus* is the long-eared bat. White

I was much entertained last summer with a tame bat, which would take flies out of a person's hand. If you gave it any thing to eat, it brought it's wings round before the mouth, hovering and hiding it's head in the manner of birds of prey when they feed. The adroitness it shewed in shearing off the wings of the flies, which were always rejected, was worthy of observation, and pleased me much. Insects seemed to be most acceptable, though it did not refuse raw flesh when offered: so that the notion that bats go down chimnies and gnaw men's bacon, seems no improbable story. While I amused myself with this wonderful quadruped, I saw it several times confute the vulgar opinion, that bats when down on a flat surface cannot get on the wing again, by rising with great ease from the floor. It ran, I observed, with more dispatch than I was aware of; but in a most ridiculous and grotesque manner.

Bats drink on the wing, like swallows, by sipping the surface, as they play over pools and streams. They love to frequent waters, not only for the sake of drinking, but on account of insects, which are found over them in the greatest plenty. As I was going, some years ago, pretty late, in a boat from *Richmond* to *Sunbury*, on a warm summer's evening, I think I saw myriads of bats between the two places: the air swarmed with them all along the *Thames*, so that hundreds were in sight at a time.

I am, &c.

LETTER XII.

TO THE SAME.

November 4, 1767.

Sir,

It gave me no small satisfaction to hear that the *falco*[1] turned out an uncommon one. I must confess I should have been better pleased to have heard that I had sent you a bird that you had never seen before; but that, I find, would be a difficult task.

himself added the *Noctule* (*Vesperugo noctula*, Schreb.) to the list of Selborne (and British) bats. It had been described, with a figure of its head, by Daubenton in 1759, while Buffon had included it in his *Histoire Naturelle*. Fifteen British bats are now known.]

[1] This hawk proved to be the *falco peregrinus*; a variety. [See Letters X. and XI. to Pennant.]

I have procured some of the mice mentioned in my former letters, a young one and a female with young, both of which I have preserved in brandy. From the colour, shape, size, and manner of nesting, I make no doubt but that the species is non-descript. They are much smaller, and more slender, than the *mus domesticus medius* of *Ray;* and have more of the squirrel or dormouse colour: their belly is white; a straight line along their sides divides the shades of their back and belly. They never enter into houses; are carried into ricks and barns with the sheaves; abound in harvest; and build their nests amidst the straws of the corn above the ground, and sometimes in thistles. They breed as many as eight at a litter, in a little round nest composed of the blades of grass or wheat.

One of these nests I procured this autumn, most artificially platted, and composed of the blades of wheat; perfectly round, and about the size of a cricket-ball; with the aperture so ingeniously closed, that there was no discovering to what part it belonged. It was so compact and well filled, that it would roll across the table without being discomposed, though it contained eight little mice that were naked and blind. As this nest was perfectly full, how could the dam come at her litter respectively so as to administer a teat to each? perhaps she opens different places for that purpose, adjusting them again when the business is over: but she could not possibly be contained herself in the ball with her young, which moreover would be daily increasing in bulk. This wonderful procreant cradle, an elegant instance of the efforts of instinct, was found in a wheat-field suspended in the head of a thistle.[1]

A gentleman, curious in birds, wrote me word that his servant had shot one last *January,* in that severe weather, which he believed would puzzle me. I called to see it this summer, not knowing what to expect: but, the moment I took it in hand, I pronounced it the male *garrulus bohemicus* or *German* silk-tail,[2] from the five peculiar crimson tags or points which it carries at the ends of five of the short remiges. It cannot, I suppose, with any propriety, be called an *English* bird: and yet I see, by *Ray's Philosoph. Letters,* that great flocks of them, feeding on haws, appeared in this kingdom in the winter of 1685.

The mention of haws puts me in mind that there is a total

[1] [See Letter X. to Pennant, and note thereon.]

[2] [*Ampelis garrulus*, L. Waxwings were common in 1866-67, and again in 1872-73.]

failure of that wild fruit, so conducive to the support of many of the winged nation. For the same severe weather, late in the spring, which cut off all the produce of the more tender and curious trees, destroyed also that of the more hardy and common.

Some birds, haunting with the missel-thrushes, and feeding on the berries of the yew-tree, which answered to the description of the *merula torquata* or *ring-ouzel*, were lately seen in this neighbourhood. I employed some people to procure me a specimen, but without success. See Letter VIII.

Query—Might not *Canary* birds be naturalized to this climate, provided their eggs were put, in the spring, into the nests of some of their congeners, as goldfinches, greenfinches, &c.? Before winter perhaps they might be hardened, and able to shift for themselves.

About ten years ago I used to spend some weeks yearly at *Sunbury*, which is one of those pleasant villages lying on the *Thames*, near *Hampton-court*. In the autumn, I could not help being much amused with those myriads of the swallow kind which assemble in those parts. But what struck me most was, that, from the time they began to congregate, forsaking the chimnies and houses, they roosted every night in the osier-beds of the aits of that river. Now this resorting towards that element, at that season of the year, seems to give some countenance to the northern opinion (strange as it is) of their retiring under water. A *Swedish* naturalist [1] is so much persuaded of that fact, that he talks, in his calendar of *Flora*, as familiarly of the swallow's going under water in the beginning of *September*, as he would of his poultry going to roost a little before sunset.[2]

An observing gentleman in *London* writes me word that he saw an house-martin, on the twenty-third of last *October*, flying in and out of it's nest in the *Borough*. And I myself, on the twenty-ninth of last *October* (as I was travelling through *Oxford*), saw four or five swallows hovering round and settling on the roof of the county-hospital.

Now is it likely that these poor little birds (which perhaps had not been hatched but a few weeks) should, at that late season of the year, and from so midland a county, attempt a voyage to *Goree* or *Senegal*, almost as far as the *equator*?[3]

[1] [*Calendarium Floræ*, A. M. Berger, 1756. A thesis published in the *Amœnitates Academicæ*, vol. iv. (1759). Translated, with the addition of an English Calendar of Flora, by Stillingfleet (*Misc. Tracts*, 1755).]

[2] [See Introduction, p. xxxii.]

[3] See *Adanson's* Voyage to *Senegal*. [See also Letter XXXIX. to Pennant.]

I acquiesce entirely in your opinion—that, though most of the swallow kind may migrate, yet that some do stay behind and hide with us during the winter.

As to the short-winged soft-billed birds, which come trooping in such numbers in the spring, I am at a loss even what to suspect about them. I watched them narrowly this year, and saw them abound till about *Michaelmas*, when they appeared no longer. Subsist they cannot openly among us, and yet elude the eyes of the inquisitive: and, as to their hiding, no man pretends to have found any of them in a torpid state in the winter. But with regard to their migration, what difficulties attend that supposition! that such feeble bad fliers (who the summer long never flit but from hedge to hedge) should be able to traverse vast seas and continents in order to enjoy milder seasons amidst the regions of *Africa!*

LETTER XIII.

TO THE SAME.

Selborne, Jan. 22, 1768.

SIR,

As in one of your former letters you expressed the more satisfaction from my correspondence on account of my living in the most southerly county; so now I may return the compliment, and expect to have my curiosity gratified by your living much more to the North.

For many years past I have observed that towards *Christmas* vast flocks of chaffinches have appeared in the fields; many more, I used to think, than could be hatched in any one neighbourhood. But, when I came to observe them more narrowly, I was amazed to find that they seemed to me to be almost all hens.[1] I communicated my suspicions to some intelligent neighbours, who, after taking pains about the matter, declared that they also thought them all mostly females; at least fifty to one. This extraordinary occurrence brought to my mind the remark of *Linnæus;* that "before winter all their hen chaffinches

[1] [See the fourth edition of Yarrell's *British Birds*, vol. ii., p. 70 f., where the question is discussed of the separation of the sexes of the chaffinch in winter. This separation is only "partial and temporary" (H. Saunders), but has given the bird its specific name (*Fringilla coelebs*). See Letter VIII. to Barrington.]

"migrate through *Holland* into *Italy*". Now I want to know, from some curious person in the north, whether there are any large flocks of these finches with them in the winter, and of which sex they mostly consist? For, from such intelligence, one might be able to judge whether our female flocks migrate from the other end of the island, or whether they come over to us from the continent.

We have, in the winter, vast flocks of the common linnets; more, I think, than can be bred in any one district. These, I observe, when the spring advances, assemble on some tree in the sunshine, and join all in a gentle sort of chirping, as if they were about to break up their winter quarters and betake themselves to their proper summer homes. It is well known, at least, that the swallows and the fieldfares do congregate with a gentle twittering before they make their respective departure.

You may depend on it that the bunting, *emberiza miliaria*, does not leave this country in the winter. In *January* 1767, I saw several dozen of them, in the midst of a severe frost, among the bushes on the downs near *Andover:* in our woodland enclosed district it is a rare bird.[1]

Wagtails, both white and yellow, are with us all the winter.[2] Quails crowd to our southern coast, and are often killed in numbers by people that go on purpose.

Mr. *Stillingfleet*, in his Tracts, says that "if the wheatear "(*œnanthe*) does not quit *England*, it certainly shifts places; for "about harvest they are not to be found, where there was before "great plenty of them". This well accounts for the vast quantities that are caught about that time on the south downs near *Lewes*, where they are esteemed a delicacy. There have been shepherds, I have been credibly informed, that have made many pounds in a season by catching them in traps. And though

[1] [The common bunting is almost exclusively a bird of the corn lands, and therefore rare at Selborne. Bell notes on this passage that the cirl bunting (*Emberiza cirlus*, L.) is now resident in the district. Whether it was to be found there in White's time we cannot guess; it was not known as a British bird till the year 1800. White, in spite of his occasional deafness (see Letter XXII. to Barrington), seems to have been quicker with his ears than with his eyes in observing birds, but it is quite possible that he failed to distinguish the song of the cirl bunting from that of the yellow hammer. Even with our knowledge of the voices and appearance of the two species, it is not always easy to distinguish them at a glance.]

[2] [By "yellow wagtail" White must here mean the grey wagtail (*Motacilla melanope*, Pall.), as the yellow wagtail (*M. raii*, Bonap.) never winters in England. The so-called grey species shows much sulphur yellow on its under parts. But White has little to tell us of the wagtails, and evidently had not bent his mind to observe them closely.]

such multitudes are taken, I never saw (and I am well acquainted with those parts) above two or three at a time: for they are never gregarious. They may perhaps migrate in general; and, for that purpose, draw towards the coast of *Sussex* in autumn: but that they do not all withdraw I am sure; because I see a few stragglers in many counties, at all times of the year, especially about warrens and stone quarries.[1]

I have no acquaintance, at present, among the gentlemen of the navy: but have written to a friend, who was a sea-chaplain in the late war, desiring him to look into his minutes, with respect to birds that settled on their rigging during their voyage up or down the channel. What *Hasselquist* says on that subject is remarkable: there were little short-winged birds frequently coming on board his ship all the way from our channel quite up to the *Levant*, especially before squally weather.

What you suggest, with regard to *Spain*, is highly probable. The winters of *Andalusia* are so mild, that, in all likelihood, the soft-billed birds that leave us at that season may find insects sufficient to support them there.

Some young man, possessed of fortune, health, and leisure, should make an autumnal voyage into that kingdom; and should spend a year there, investigating the natural history of that vast country. Mr. *Willughby*[2] passed through that kingdom on such an errand; but he seems to have skirted along in a superficial manner and an ill humour, being much disgusted at the rude dissolute manners of the people.

I have no friend left now at *Sunbury* to apply to about the swallows roosting on the aits of the *Thames:* nor can I hear any more about those birds which I suspected were *merulæ torquatæ*.

As to the small mice, I have farther to remark, that though they hang their nests for breeding up amidst the straws of the standing corn, above the ground; yet I find that, in the winter, they burrow deep in the earth, and make warm beds of grass: but their grand rendezvous seems to be in corn-ricks, into which they are carried at harvest. A neighbour housed an oat-rick lately, under the thatch of which were assembled near an hundred, most of which were taken; and some I saw. I measured them;

[1] [Though the wheatear is rarely seen in winter, there seems to be no doubt that White was not here in error. See Yarrell's *British Birds* (ed. Newton), vol. i., p. 350. Further particulars respecting the wheatear are given in Letter XVII. to Barrington.]

[2] See *Ray's* Travels, p. 466.

and found that, from nose to tail, they were just two inches and a quarter, and their tails just two inches long. Two of them, in a scale, weighed down just one copper halfpenny, which is about the third of an ounce avoirdupois: so that I suppose they are the smallest quadrupeds in this island. A full-grown *mus medius domesticus* weighs, I find, one ounce lumping weight, which is more than six times as much as the mouse above; and measures from nose to rump four inches and a quarter, and the same in it's tail.[1] We have had a very severe frost and deep snow this month. My thermometer was one day fourteen degrees and an half below the freezing-point, within doors. The tender evergreens were injured pretty much. It was very providential that the air was still, and the ground well covered with snow, else vegetation in general must have suffered prodigiously. There is reason to believe that some days were more severe than any since the year 1739-40.

I am, &c., &c.

LETTER XIV.

TO THE SAME.

Selborne, March 12, 1768.

DEAR SIR,

IF some curious gentleman would procure the head of a fallow-deer, and have it dissected, he would find it furnished with two spiracula, or breathing-places, besides the nostrils; probably analogous to the *puncta lachrymalia* in the human head.[2] When deer

[1] [See preceding letter. "It is perhaps not generally known that the tail of the harvest mouse is prehensile, and is in consequence of great service to the little animal when descending the wheat stalks, amongst which its nest is usually suspended. In *The Zoologist* for 1843, p. 289, will be found a woodcut in illustration of this fact as observed by the Rev. Pemberton Bartlett."—*Harting*.]

[2] [Hunter and Owen have shown by dissection that these cavities are closed internally, and do not communicate with the air passages. E. T. Bennett, in his edition of White's *Selborne*, notes that the Indian antelopes kept in the Zoological Society's gardens were fond of everting the sacs, and rubbing them against an observer's hand. "After the finger has been subjected for some time to this rubbing, it will be found to have acquired a heavy odour, of a salt and peculiar character" (*Bennett*). Other observers describe the odour as musky. Objects rubbed with the waxy secretion of the glands attract the attention of the antelopes, which sniff at and lick them. The glands are usually larger in the male than in the female. They occur, not only in many deer, but also in most species of sheep and goat. The most probable explanation of their function is that the secretion is alluring to the females.]

are thirsty they plunge their noses, like some horses, very deep under water, while in the act of drinking, and continue them in that situation for a considerable time: but, to obviate any inconveniency, they can open two vents, one at the inner corner of each eye, having a communication with the nose. Here seems to be an extraordinary provision of nature worthy our attention; and which has not, that I know of, been noticed by any naturalist. For it looks as if these creatures would not be suffocated, though both their mouths and nostrils were stopped. This curious formation of the head may be of singular service to beasts of chase, by affording them free respiration: and no doubt these additional nostrils are thrown open when they are hard run.[1] Mr. *Ray* observed that, at *Malta*, the owners slit up the nostrils of such asses as were hard worked: for they, being naturally strait or small, did not admit air sufficient to serve them when they travelled, or laboured, in that hot climate. And we know that grooms, and gentlemen of the turf, think large nostrils necessary, and a perfection, in hunters and running horses.

Oppian, the *Greek* poet, by the following line, seems to have had some notion that stags have four spiracula:

"Τετραδυμοι 'ρινες, πισυρες πνοιησι διαυλοι."
"Quadrifidæ nares, quadruplices ad respirationem canales."
Opp., *Cyn.*, Lib. ii., l. 181.

Writers, copying from one another, make *Aristotle* say that goats breathe at their ears; whereas he asserts just the contrary: —"Αλκμαιων γαρ ουκ αληθη λεγει, φαμενος αναπνειν τας αιγας κατα "τα ωτα". "*Alcmæon* does not advance what is true, when he "avers that goats breathe through their ears."—History of Animals, Book I., chap. xi.

[1] In answer to this account, Mr. *Pennant* sent me the following curious and pertinent reply. "I was much surprised to find in the *antelope* something ana- "logous to what you mention as so remarkable in deer. This animal also has a "long slit beneath each eye, which can be opened and shut at pleasure. On holding "an orange to one, the creature made as much use of those orifices as of his nostrils, "applying them to the fruit, and seeming to smell it through them."

LETTER XV.

TO THE SAME.

Selborne, March 30, 1768.

DEAR SIR,

SOME intelligent country people have a notion that we have, in these parts, a species of the *genus mustelinum*, besides the weasel, stoat, ferret, and polecat; a little reddish beast, not much bigger than a field mouse, but much longer, which they call a *cane*.[1] This piece of intelligence can be little depended on; but farther inquiry may be made.

A gentleman in this neighbourhood had two milkwhite rooks in one nest. A booby of a carter, finding them before they were able to fly, threw them down and destroyed them, to the regret of the owner, who would have been glad to have preserved such a curiosity in his rookery. I saw the birds myself nailed against the end of a barn, and was surprised to find that their bills, legs, feet, and claws were milkwhite.

A shepherd saw, as he thought, some white larks on a down above my house this winter: were not these the *emberiza nivalis*, the snow-flake of the *Brit. Zool.* ? No doubt they were.

A few years ago I saw a cock bullfinch in a cage, which had been caught in the fields after it was come to it's full colours. In about a year it began to look dingy; and, blackening every succeeding year, it became coal-black at the end of four. It's chief food was hempseed. Such influence has food on the colour of animals! The pied and mottled colours of domesticated animals are supposed to be owing to high, various, and unusual food.[2]

I had remarked, for years, that the root of the cuckoo-pint (*arum*) was frequently scratched out of the dry banks of hedges, and eaten in severe snowy weather. After observing, with some exactness, myself, and getting others to do the same, we found

[1] [This is probably nothing but a female weasel, the female in this species being decidedly smaller than the male.]

[2] [Many like cases of change of colour induced by change of food are now recorded. Larks have been observed to turn black when fed on hemp seed; canaries to redden on cayenne pepper; green parrots to develop red and yellow feathers when fed on fish or pounded maize. A shipwrecked crew subsisted for a long time on penguins' eggs, and it was remarked that their hair and complexion turned lighter, black hair becoming brown or red. See Distant on "Assimilative Coloration," *Zoologist*, 4th ser., vol. ii., p. 400 (1898).]

it was the thrush kind that searched it out. The root of the *arum* is remarkably warm and pungent.

Our flocks of female chaffinches have not yet forsaken us. The blackbirds and thrushes are very much thinned down by that fierce weather in *January*.

In the middle of *February* I discovered, in my tall hedges, a little bird that raised my curiosity: it was of that yellow-green colour that belongs to the *salicaria* kind, and, I think, was soft-billed. It was no *parus;* and was too long and too big for the golden-crowned wren, appearing most like the largest willow-wren. It hung sometimes with it's back downwards, but never continuing one moment in the same place. I shot at it, but it was so desultory that I missed my aim.[1]

I wonder that the stone curlew, *charadrius oedicnemus*, should be mentioned by the writers as a rare bird: it abounds in all the campaign parts of *Hampshire* and *Sussex*, and breeds, I think, all the summer, having young ones, I know, very late in the autumn. Already they begin clamouring in the evening. They cannot, I think, with any propriety, be called, as they are by Mr. *Ray*, "*circa aquas versantes*"; for with us, by day at least, they haunt only the most dry, open, upland fields and sheep walks, far removed from water: what they may do in the night I cannot say. Worms are their usual food, but they also eat toads and frogs.

I can show you some good specimens of my *new mice*. *Linnæus* perhaps, would call the species *mus minimus*.

LETTER XVI.

TO THE SAME.

Selborne, April 18, 1768.

Dear Sir,

The history of the stone curlew, *charadrius oedicnemus*, is as follows. It lays it's eggs, usually two, never more than three, on the bare ground, without any nest, in the field; so that the countryman, in stirring his fallows, often destroys them. The young run

[1] [This may have been the chiffchaff (*Phylloscopus rufus*, Bechst.), as Mr. Harting has suggested in his edition; this bird occasionally winters in England. Or it may have been a stray siskin (*Chrysomitris spinus*, L.), a bird more apt to hang with its back downwards than the chiffchaff, and one which White does not seem to have known well. See note on Letter VIII. to Barrington. By *desultory* White means to describe the restless and apparently capricious movements of the bird.]

immediately from the egg like partridges, &c. and are withdrawn to some flinty field by the dam, where they skulk among the stones, which are their best security; for their feathers are so exactly of the colour of our grey spotted flints, that the most exact observer, unless he catches the eye of the young bird, may be eluded. The eggs are short and round; of a dirty white, spotted with dark bloody blotches. Though I might not be able, just when I pleased, to procure you a bird, yet I could show you them almost any day; and any evening you may hear them round the village, for they make a clamour which may be heard a mile. *Oedicnemus* is a most apt and expressive name for them, since their legs seem swoln like those of a gouty man. After harvest I have shot them before the pointers in turnip-fields.[1]

I make no doubt but there are three species of the *willow-wren:* two I know perfectly; but have not been able yet to procure the third. No two birds can differ more in their notes, and that constantly, than those two that I am acquainted with; for the one has a joyous, easy, laughing note; the other a harsh loud chirp. The former is every way larger, and three quarters of an inch longer, and weighs two drams and an half; while the latter weighs but two: so the songster is one fifth heavier than the chirper. The chirper (being the first summer-bird of passage that is heard, the wryneck sometimes excepted) begins his two notes in the middle of *March,* and continues them through the spring and summer till the end of *August,* as appears by my journals. The legs of the larger of these two are flesh-coloured; of the less, black.[2]

[1] [This bird is not a curlew, which it resembles only in its cry, but is related to the bustards and plovers. See also Letters XXI., XXXIII. to Pennant, LIX. to Barrington, and the *Observations on Nature.* White's account of the stone curlew is one of his best contributions to ornithology; it was supplemented, as we learn from Letter XXI., by the observations of a friend in Sussex. The observation of the protective colouration of the young seems to be White's own. The bird is not common in the Selborne district, which is not well suited to its mode of life. Even in White's day it seems to have been on the chalk downs of Sussex that new observations on this bird were to be made. On the cry of the stone curlew see Letter LIX. to Barrington.]

[2] [This passage is an important one in the history of British ornithology. The three common species of *Phylloscopus* have only been clearly distinguished since it was written: (1) the chiffchaff (*P. rufus,* Bechst.), whose loud chirp (*harsh* seems hardly appropriate), black legs and early arrival are accurately noted; (2) the willow-wren (*P. trochilus,* L.), slightly larger and heavier, with pale legs and "laughing" note; (3) the wood-wren (*P. sibilatrix,* Bechst.), which White had not yet procured, the bird alluded to in Letter X. to Pennant, which makes "a sibilous shivering noise in the top of tall woods". It is accurately described in Letter XIX. to Pennant.]

The *grasshopper-lark*[1] began his sibilous note in my fields last *Saturday*. Nothing can be more amusing than the whisper of this little bird, which seems to be close by though at an hundred yards distance; and, when close at your ear, is scarce any louder than when a great way off. Had I not been a little acquainted with insects, and known that the grasshopper kind is not yet hatched, I should have hardly believed but that it had been a *locusta* whispering in the bushes. The country people laugh when you tell them that it is the note of a bird. It is a most artful creature, sculking in the thickest part of a bush; and will sing at a yard distance, provided it be concealed. I was obliged to get a person to go on the other side of the hedge where it haunted; and then it would run, creeping like a mouse, before us for an hundred yards together, through the bottom of the thorns; yet it would not come into fair sight: but in a morning early, and when undisturbed, it sings on the top of a twig, gaping and shivering with it's wings. Mr. *Ray* himself had no knowledge of this bird, but received his account from Mr. *Johnson*, who apparently confounds it with the *reguli non cristati*,[2] from which it is very distinct. See *Ray's Philos. Letters*, p. 108.

The fly-catcher[3] (*stoparola*) has not yet appeared: it usually breeds in my vine. The *redstart* begins to sing: it's note is short and imperfect, but is continued till about the middle of *June*. The *willow-wrens*[4] (the smaller sort) are horrid pests in a garden, destroying the pease, cherries, currants, &c.; and are so tame that a gun will not scare them.

A List *of the* Summer Birds *of* Passage *discovered in this neighbourhood, ranged somewhat in the Order in which they appear:*[5]

	Linnæi Nomina.
Smallest willow-wren,	*Motacilla trochilus:*
Wryneck,	*Jynx torquilla:*
House-swallow,	*Hirundo rustica:*

[1] [Now called the grasshopper warbler (*Locustella nævia*, Bodd.).]

[2] [The willow-wrens.]

[3] [The spotted flycatcher (*Muscicapa grisola*, L.).]

[4] [Chiffchaffs and willow-wrens come into gardens after their moult in August, but feed chiefly on aphides and other insects, in pursuit of which they may do a certain amount of damage to fruit. Garden-warblers and blackcaps, on the other hand, certainly eat fruit; and Mr. Harting has suggested that the young of the former (a species unknown to White) were mistaken by him for willow-wrens.]

[5] [In preparing this list for Pennant's use White adopts the Linnæan names; in Letters I. and II. to Barrington he gives the names used in Ray's *Synopsis*

Martin,	*Hirundo urbica:*
Sand-martin,	*Hirundo riparia:*
Cuckoo,	*Cuculus canorus:*
Nightingale,	*Motacilla luscinia:*
Blackcap,	*Motacilla atricapilla:*
Whitethroat,	*Motacilla sylvia:*
Middle willow-wren,	*Motacilla trochilus:*
Swift,	*Hirundo apus:*
Stone curlew ?,	*Charadrius oedicnemus ?*
Turtle-dove ?,	*Turtur aldrovandi ?* [1]
Grasshopper-lark,	*Alauda trivialis:* [2]
Landrail,	*Rallus crex:*
Largest willow-wren,	*Motacilla trochilus:*
Redstart,	*Motacilla phœnicurus:*
Goatsucker, or fern-owl,	*Caprimulgus europæus:*
Fly-catcher,	*Muscicapa grisola.*

My countrymen talk much of a bird that makes a clatter with it's bill against a dead bough, or some old pales, calling it a jar-bird. I procured one to be shot in the very fact; it proved to be the *sitta europæa* (*the nuthatch*). Mr. *Ray* says that the less spotted *woodpecker* does the same. This noise may be heard a furlong or more.

Now is the only time to ascertain the short-winged summer birds; for, when the leaf is out, there is no making any remarks on such a restless tribe; and, when once the young begin to appear, it is all confusion: there is no distinction of genus, species, or sex.[3]

In breeding-time snipes play over the moors, piping and humming: they always hum as they are descending. Is not their hum ventriloquous like that of the turkey? Some suspect it is made by their wings.[4]

Avium. In each case he considers the prejudices or convenience of his correspondent. Barrington has a chapter in his *Miscellanies* written to prove the superiority of Ray's nomenclature and descriptions.]

[1] [*Columba turtur*, L.]

[2] ["Linnæus's *Alauda trivialis* is the tree-pipit. See Yarr., 4th edit., i., pp. 369, 370. Linnæus did not know the grasshopper lark or warbler."—*Newton*, in Bell's Ed.]

[3] [Had White lived in the days of field-glasses, he would not have worded this paragraph so strongly, but it is true enough that the days before the leaf is fully out are invaluable to a field ornithologist.]

[4] [See Letters X. and XXXIX. to Pennant. The "drumming" of the snipe is now generally believed to be made both by wings and tail, but chiefly by the wings.]

This morning I saw the golden-crowned wren, whose crown glitters like burnished gold. It often hangs like a titmouse, with it's back downwards.

Yours, &c., &c.

LETTER XVII.

TO THE SAME.

Selborne, June 18, 1768.

DEAR SIR,

ON *Wednesday* last arrived your agreeable letter of *June* the 10th. It gives me great satisfaction to find that you pursue these studies still with such vigour, and are in such forwardness with regard to reptiles and fishes.

The reptiles, few as they are, I am not acquainted with, so well as I could wish, with regard to their natural history. There is a degree of dubiousness and obscurity attending the propagation of this class of animals, something analogous to that of the *cryptogamia* in the sexual system of plants: and the case is the same with regard to some of the fishes; as the eel, &c.

The method in which toads procreate and bring forth seems to be very much in the dark. Some authors say that they are viviparous: and yet *Ray* classes them among his oviparous animals; and is silent with regard to the manner of their bringing forth. Perhaps they may be ἔσω μὲν ὠοτόκοι, ἔξω δὲ ζωοτόκοι, as is known to be the case with the viper.[1]

The copulation of frogs (or at least the appearance of it; for *Swammerdam* proves that the male has no *penis intrans*) is notorious to every body: because we see them sticking upon each others' backs for a month together in the spring: and yet I never saw, or read, of toads being observed in the same situation. It is strange that the matter with regard to the venom of toads has not been yet settled. That they are not noxious to some animals is plain: for ducks, buzzards, owls, stone curlews, and snakes, eat them, to my knowledge, with impunity. And I well remember the time, but was not eye-witness to the fact (though numbers of

[1] [The reproductive process in the toad is very similar to that of the frog, but the eggs, instead of being densely clustered, form a rope, often many yards long.]

persons were), when a quack, at this village, ate a toad to make the country-people stare; afterwards he drank oil.[1]

I have been informed also, from undoubted authority, that some ladies (ladies you will say of peculiar taste) took a fancy to a toad, which they nourished summer after summer, for many years, till he grew to a monstrous size, with the maggots which turn to flesh flies. The reptile used to come forth every evening from an hole under the garden-steps; and was taken up, after supper, on the table to be fed. But at last a tame raven, kenning him as he put forth his head, gave him such a severe stroke with his horny beak as put out one eye. After this accident the creature languished for some time and died.

I need not remind a gentleman of your extensive reading of the excellent account there is from Mr. *Derham*, in *Ray*'s Wisdom of God in the Creation (p. 365), concerning the migration of frogs from their breeding ponds. In this account he at once subverts that foolish opinion of their dropping from the clouds in rain; shewing that it is from the grateful coolness and moisture of those showers that they are tempted to set out on their travels, which they defer till those fall. Frogs are as yet in their tadpole state; but, in a few weeks, our lanes, paths, fields, will swarm for a few days with myriads of those emigrants, no larger than my little finger nail. *Swammerdam* gives a most accurate account of the method and situation in which the male impregnates the

[1] [Bell gives the following account of the toad from a paper found among White's MSS. It is in a boy's handwriting, and was probably written to dictation. The gardener was doubtless White's old gardener, Thomas Hoar.

"The benevolence of modern naturalists hath induced them to pronounce the toad harmless, in contradiction to the extravagant tales of the ancients concerning its poisonous qualities, which exposed it to many cruelties. But by what I saw the other day, I am convinced it hath some venomous properties, which it exerts in its defence. There seems to be some resemblance between the toad and the viper, and the frog and the snake: the frog and the snake have a power of escaping from their enemies by their agility, and therefore are harmless; but the toad and viper being sluggish, and having no powers of escaping, are armed with poison. As I passed the gardener the other day, he turned up a toad in digging, which I desired him not to destroy, as it was an inoffensive animal, and helped to clear the ground of grubs and insects; upon which, to convince me that it was not altogether harmless, he took the toad up by the skin of its back, and placing it on a gravel walk, set a little terrier bitch at it, who, from former experiments, was aware of its venomous quality, and tho' naturally very fierce and eager, she touched it very gently with her nose, nothing equal to the gardener's grasp when he took it up, and instantly the foam came from her mouth, and her face and eyes were strongly convulsed. This continued upon her half an hour, during which time she would not eat any thing that was offered her. How the venom was communicated I am not able to say. Those who make this part of physiology their study would do well to try the experiment."]

spawn of the female. How wonderful is the œconomy of Providence with regard to the limbs of so vile a reptile! While it is an *aquatic* it has a fish-like tail, and no legs: as soon as the legs sprout, the tail drops off as useless,[1] and the animal betakes itself to the land!

Merret, I trust, is widely mistaken when he advances that the *rana arborea* is an *English* reptile; it abounds in *Germany* and *Switzerland*.

It is to be remembered that the *salamandra aquatica* of *Ray* (the water-newt or eft) will frequently bite at the angler's bait, and is often caught on his hook. I used to take it for granted that the *salamandra aquatica* was hatched, lived, and died, in the water. But *John Ellis*, Esq. F.R.S. (the coralline *Ellis*) asserts, in a letter to the Royal Society, dated *June* the 5th, 1766, in his account of the *mud inguana*, an amphibious *bipes* from *South Carolina*,[2] that the water-eft, or newt, is only the *larva* of the land-eft, as tadpoles are of frogs. Lest I should be suspected to misunderstand his meaning, I shall give it in his own words. Speaking of the *opercula* or coverings to the gills of the *mud inguana*, he proceeds to say that "The form of these pennated "coverings approach very near to what I have some time ago "observed in the *larva* or *aquatic* state of our *English lacerta*, "known by the name of eft, or newt; which serve them for "coverings to their gills, and for fins to swim with while in this "state; and which they lose, as well as the fins of their tails, "when they *change* their state and *become land animals*, as I have "observed, by keeping them alive for some time myself."

Linnæus, in his *Systema Naturæ*, hints at what Mr. *Ellis* advances more than once.

Providence has been so indulgent to us as to allow of but one venomous reptile of the serpent kind in these kingdoms, and that is the viper. As you propose the good of mankind to be an object of your publications, you will not omit to mention common sallad-oil as a sovereign remedy against the bite of the viper. As to the blind worm (*anguis fragilis*, so called because it snaps in sunder with a small blow), I have found, on examination, that it

[1] [The tadpole's tail does not drop off, but is absorbed and shrinks.]

[2] [The *Siren lacertina* of Linnæus. Some of the elder naturalists took this to be the tadpole of some salamander, but it is now known to retain its gills throughout life. These gills are the "opercula" or "pennated coverings" mentioned in the text. They are true external gills, like those of the fresh-hatched tadpole, and are not used as fins by any amphibian.]

is perfectly innocuous. A neighbouring yeoman (to whom I am indebted for some good hints) killed and opened a female viper about the twenty-seventh of *May:* he found her filled with a chain of eleven eggs, about the size of those of a blackbird; but none of them were advanced so far towards a state of maturity as to contain any rudiments of young. Though they are oviparous, yet they are viviparous also, hatching their young within their bellies, and then bringing them forth. Whereas snakes lay chains of eggs every summer in my melon beds, in spite of all that my people can do to prevent them; which eggs do not hatch till the spring following, as I have often experienced. Several intelligent folks assure me that they have seen the viper open her mouth and admit her helpless young down her throat on sudden surprises, just as the female opossum does her brood into the pouch under her belly, upon the like emergencies; and yet the *London* viper-catchers insist on it, to Mr. *Barrington,* that no such thing ever happens. The serpent kind eat, I believe, but once in a year; or, rather, but only just at one season of the year. Country people talk much of a water-snake, but, I am pretty sure, without any reason; for the common snake (*coluber natrix*) delights much to sport in the water, perhaps with a view to procure frogs and other food.

I cannot well guess how you are to make out your twelve species of reptiles,[1] unless it be by the various species, or rather varieties, of our *lacerti,* of which *Ray* enumerates five. I have not had opportunity of ascertaining these; but remember well to have seen, formerly, several beautiful green *lacerti* on the

[1] [The following fourteen species of reptiles and amphibians are now known as British; those marked "S" have been found at Selborne.

Reptiles.
Common snake (*Tropidonotus natrix*, L.), S.
Smooth snake (*Coronella lævis*, Lacép.).
Viper (*Viper berus*, L.), S.
Common lizard (*Lacerta vivipara*, Jacq.), S.
Sand lizard (*L. agilis*, L.).
Green lizard (*L. viridis*, L.).
Slowworm (*Anguis fragilis*, L.), S.

Amphibians.
Great crested newt (*Triton cristatus*, Laur.), S.
Smooth newt (*T. taeniatus*, Schn.), S.
Palmated newt (*T. palmipes*, Latr.), S.
Common toad (*Bufo vulgaris*, Laur.), S.
Natterjack (*B. calamita*, Laur.), S.
Common frog (*Rana temporaria*, L.), S.
Edible frog (*R. esculenta*, L.).]

sunny sandbanks near *Farnham*, in *Surrey*; and *Ray* admits there are such in *Ireland*.

LETTER XVIII.

TO THE SAME.

Selborne, July 27, 1768.

DEAR SIR,

I RECEIVED your obliging and communicative letter of *June* the 28th, while I was on a visit at a gentleman's house, where I had neither books to turn to, nor leisure to sit down, to return you an answer to many queries, which I wanted to resolve in the best manner that I am able.

A person, by my order, has searched our brooks, but could find no such fish as the *gasterosteus pungitius*:[1] he found the *gasterosteus aculeatus*[2] in plenty. This morning, in a basket, I packed a little earthen pot full of wet moss, and in it some sticklebacks, male and female; the females big with spawn: some lamperns; some bulls heads; but I could procure no minnows. This basket will be in *Fleet-street* by eight this evening; so I hope *Mazel*[3] will have them fresh and fair to-morrow morning. I gave some directions, in a letter, to what particulars the engraver should be attentive.

Finding, while I was on a visit, that I was within a reasonable distance of *Ambresbury*, I sent a servant over to that town, and procured several living specimens of loaches, which he brought, safe and brisk, in a glass decanter. They were taken in the gullies that were cut for watering the meadows. From these fishes (which measured from two to four inches in length) I took the following description: "The loach, in it's general aspect, has "a pellucid appearance: it's back is mottled with irregular col- "lections of small black dots, not reaching much below the "*linea lateralis*, as are the back and tail fins: a black line runs "from each eye down to the nose; it's belly is of a silvery white; "the upper jaw projects beyond the lower, and is surrounded

[1] [Ten-spined stickleback.]
[2] [Three-spined stickleback.]
[3] [Peter Mazell, the engraver of the plates in Pennant's "British Zoology," and of three of those in the original edition of this work, namely the two of the church and that of the Plestor.—*Bell.*]

"with six feelers, three on each side: it's pectoral fins are large, "it's ventral much smaller; the fin behind it's anus small; it's "dorsal-fin large, containing eight spines; it's tail, where it joins "to the tail-fin, *remarkably broad*, without any taperness, so as "to be characteristic of this genus: the tail-fin is broad, and "square at the end. From the breadth and muscular strength "of the tail it appears to be an active nimble fish."

In my visit I was not very far from *Hungerford*, and did not forget to make some inquiries concerning the wonderful method of curing cancers by means of toads. Several intelligent persons, both gentry and clergy, do, I find, give a great deal of credit to what was asserted in the papers: and I myself dined with a clergyman who seemed to be persuaded that what is related is matter of fact; but, when I came to attend to his account, I thought I discerned circumstances which did not a little invalidate the woman's story of the manner in which she came by her skill. She says of herself "that, labouring under a virulent cancer, she went to some church where there was a vast crowd: on going into a pew, she was accosted by a strange clergyman; who, after expressing compassion for her situation, told her that if she would make such an application of living toads as is mentioned she would be well". Now is it likely that this unknown gentleman should express so much tenderness for this single sufferer, and not feel any for the many thousands that daily languish under this terrible disorder? Would he not have made use of this invaluable nostrum for his own emolument; or, at least, by some means of publication or other, have found a method of making it public for the good of mankind? In short, this woman (as it appears to me) having set up for a cancer-doctress, finds it expedient to amuse the country with this dark and mysterious relation.

The water-eft has not, that I can discern, the least appearance of any gills;[1] for want of which it is continually rising to the surface of the water to take in fresh air. I opened a big-bellied one indeed, and found it full of spawn. Not that this circumstance at all invalidates the assertion that they are *larvæ:* for the *larvæ* of insects are full of eggs, which they exclude the instant they enter their last state. The water-eft is continually climbing over the brims of the vessel, within which we keep it in water,

[1] [This is true of full-grown efts, but the efts pass through a tadpole-stage, in which they breathe by gills.]

and wandering away: and people every summer see numbers crawling out of the pools where they are hatched, up the dry banks. There are varieties of them, differing in colour; and some have fins up their tail and back, and some have not.[1]

LETTER XIX.

TO THE SAME.

Selborne, Aug. 17, 1768.

DEAR SIR,

I HAVE now, past dispute, made out three distinct species of the willow-wrens (*motacillæ trochili*) which *constantly* and *invariably* use distinct notes. But, at the same time, I am obliged to confess that I know nothing of your willow-lark.[2] In my letter of *April* the 18th, I had told you peremptorily that I knew your willow-lark, but had not seen it then: but, when I came to procure it, it proved, in all respects, a very *motacilla trochilus;* only that it is a size larger than the two other, and the yellow-green of the whole upper part of the body is more vivid, and the belly of a clearer white. I have specimens of the three sorts now lying before me; and can discern that there are three gradations of sizes, and that the least has black legs, and the other two flesh-coloured ones. The yellowest bird is considerably the largest, and has it's quill-feathers and secondary feathers tipped with white, which the others have not. This last haunts only the tops of trees in high beechen woods, and makes a sibilous grasshopper-like noise, now and then, at short intervals, shivering a little with its wings when it sings; and is, I make no doubt now, the *regulus non cristatus* of *Ray;* which he says "*cantat voce striduld locustæ*". Yet this great ornithologist never suspected that there were three species.[3]

[1] [In the breeding season the males of several species of triton have fins along the tail and back, which are not found at other times.]

[2] Brit. Zool. edit. 1776, octavo, p. 381.

[3] [See note to p. 36.]

LETTER XX.

TO THE SAME.

Selborne, October 8, 1768.

It is, I find, in *zoology* as it is in *botany:* all nature is so full, that that district produces the greatest variety which is the most examined. Several birds, which are said to belong to the north only, are, it seems, often in the south. I have discovered this summer three species of birds with us, which writers mention as only to be seen in the northern counties. The first that was brought me (on the 14th of *May*) was the sandpiper, *tringa hypoleucus:* it was a cock bird, and haunted the banks of some ponds near the village; and, as it had a companion, doubtless intended to have bred near that water. Besides, the owner has told me since, that, on recollection, he has seen some of the same birds round his ponds in former summers.

The next bird that I procured (on the 21st of *May*) was a male red-backed butcher bird, *lanius collurio.* My neighbour, who shot it, says that it might easily have escaped his notice, had not the outcries and chattering of the white-throats and other small birds drawn his attention to the bush where it was: it's craw was filled with the legs and wings of beetles.

The next rare birds (which were procured for me last week) were some ring-ousels, *turdi torquati.*

This week twelve months a gentleman from *London,* being with us, was amusing himself with a gun, and found, he told us, on an old yew hedge where there were berries, some birds like blackbirds, with rings of white round their necks: a neighbouring farmer also at the same time observed the same; but, as no specimens were procured, little notice was taken. I mentioned this circumstance to you in my letter of *November* the 4th, 1767: (you however paid but small regard to what I said, as I had not seen these birds myself): but last week the aforesaid farmer, seeing a large flock, twenty or thirty of these birds, shot two cocks and two hens: and says, on recollection, that he remembers to have observed these birds again last spring, about *Lady-day,* as it were, on their return to the north. Now perhaps these ousels are not the ousels of the north of *England,* but belong to the more northern parts of *Europe;* and may retire before the excessive rigor of the frosts in those parts; and return to breed

in the spring, when the cold abates. If this be the case, here is discovered a new bird of winter passage, concerning whose migrations the writers are silent: but if these birds should prove the ousels of the north of *England*, then here is a migration disclosed within our own kingdom never before remarked. It does not yet appear whether they retire beyond the bounds of our island to the south; but it is most probable that they usually do, or else one cannot suppose that they would have continued so long unnoticed in the southern counties. The ousel is larger than a blackbird, and feeds on haws; but last autumn (when there were no haws) it fed on yew-berries: in the spring it feeds on ivy-berries, which ripen only at that season, in *March* and *April*.[1]

I must not omit to tell you (as you have been so lately on the study of reptiles) that my people, every now and then of late, draw up with a bucket of water from my well, which is 63 feet deep, a large black warty lizard with a fin-tail and yellow belly.[2] How they first came down at that depth, and how they were ever to have got out thence without help, is more than I am able to say.

My thanks are due to you for your trouble and care in the examination of a buck's head. As far as your discoveries reach at present, they seem much to corroborate my suspicions; and I hope Mr. —— may find reason to give his decision in my favour; and then, I think, we may advance this extraordinary provision of nature as a new instance of the wisdom of God in the creation.

As yet I have not quite done with my history of the *oedicnemus*, or stone-curlew; for I shall desire a gentleman in *Sussex* (near whose house these birds congregate in vast flocks in the autumn) to observe nicely when they leave him, (if they do leave him) and when they return again in the spring: I was with this gentleman lately, and saw several single birds.

[1] [White's further notes on the ring-ouzel will be found in Letters XXI., XXIV., XXV., XXVI., XXXI., XXXVIII. to Pennant, and VII. to Barrington. He was the first writer to record its arrival and brief stay near the south coast in spring and autumn. These movements stimulated his curiosity, and led, in spite of inaccurate information from Pennant (see Letter XXI.), to much enlightenment on the question of migration. The ring-ouzel is strictly a *summer* migrant, as White seems to have guessed when he wrote Letter VII. to Barrington; in the present letter he is inclined to class it with the winter migrants, fieldfares, etc.]

[2] [The great crested newt.]

LETTER XXI.

TO THE SAME.

Selborne, Nov. 28, 1768.

DEAR SIR,

WITH regard to the *oedicnemus*, or stone-curlew, I intend to write very soon to my friend near *Chichester*,[1] in whose neighbourhood these birds seem most to abound; and shall urge him to take particular notice when they begin to congregate, and afterwards to watch them most narrowly whether they do not withdraw themselves during the dead of the winter. When I have obtained information with respect to this circumstance, I shall have finished my history of the *stone-curlew;* which I hope will prove to your satisfaction, as it will be, I trust, very near the truth. This gentleman, as he occupies a large farm of his own, and is abroad early and late, will be a very proper spy upon the motions of these birds: and besides, as I have prevailed on him to buy the Naturalist's Journal[2] (with which he is much delighted), I shall expect that he will be very exact in his dates. It is very extraordinary, as you observe, that a bird so common with us should never straggle to you.

And here will be the properest place to mention, while I think of it, an anecdote which the above-mentioned gentleman told me when I was last at his house; which was that, in a warren joining to his outlet, many daws (*corvi monedulæ*) build every year in the rabbit-burrows under ground. The way he and his brothers used to take their nests, while they were boys, was by listening at the mouths of the holes; and, if they heard the young ones cry, they twisted the nest out with a forked stick. Some water-fowls (*viz.* the puffins) breed, I know, in that manner; but I should never have suspected the daws of building in holes on the flat ground.

Another very unlikely spot is made use of by daws as a place to breed in, and that is *Stonehenge*. These birds deposit their nests in the interstices between the upright and the impost stones of that amazing work of antiquity: which circumstance

[1] [This was his brother-in-law's brother, John Woods, of Chilgrove, about six miles from Chichester.]

[2] [*The Naturalist's Journal*, printed for W. Sandby, Fleet Street, London, 1767. Price one shilling and sixpence. This was drawn up on the plan recommended by Daines Barrington. A copy was sent every year to Gilbert White, and these diaries, filled up by him, are now preserved in the British Museum.]

alone speaks the prodigious height of the upright stones, that they should be tall enough to secure those nests from the annoyance of shepherd-boys, who are always idling round that place.

One of my neighbours last *Saturday*, *November* the 26th, saw a martin in a sheltered bottom: the sun shone warm, and the bird was hawking briskly after flies. I am now perfectly satisfied that they do not all leave this island in the winter.

You judge very right, I think, in speaking with reserve and caution concerning the cures done by toads: for, let people advance what they will on such subjects, yet there is such a propensity in mankind towards deceiving and being deceived, that one cannot safely relate any thing from common report, especially in print, without expressing some degree of doubt and suspicion.

Your approbation, with regard to my new discovery of the migration of the ring-ousel, gives me satisfaction; and I find you concur with me in suspecting that they are foreign birds which visit us. You will be sure, I hope, not to omit to make inquiry whether your ring-ousels leave your rocks in the autumn. What puzzles me most, is the very short stay they make with us; for in about three weeks they are all gone. I shall be very curious to remark whether they will call on us at their return in the spring, as they did last year.

I want to be better informed with regard to ichthyology. If fortune had settled me near the sea-side, or near some great river, my natural propensity would soon have urged me to have made myself acquainted with their productions: but as I have lived mostly in inland parts, and in an upland district, my knowledge of fishes extends little farther than to those common sorts which our brooks and lakes produce.

I am, &c.

LETTER XXII.

TO THE SAME.

Selborne, Jan. 2, 1769.

Dear Sir,

As to the peculiarity of jackdaws building with us under the ground in rabbit-burrows, you have, in part, hit upon the reason; for, in reality, there are hardly any towers or steeples in all this country. And perhaps, *Norfolk* excepted, *Hampshire* and *Sussex*

are as meanly furnished with churches as almost any counties in the kingdom. We have many livings of two or three hundred pounds a year, whose houses of worship make little better appearance than dovecots. When I first saw *Northamptonshire*, *Cambridgeshire* and *Huntingdonshire*, and the fens of *Lincolnshire*, I was amazed at the number of spires which presented themselves in every point of view. As an admirer of prospects, I have reason to lament this want in my own country; for such objects are very necessary ingredients in an elegant landscape.

What you mention with respect to reclaimed toads raises my curiosity. An ancient author, though no naturalist, has well remarked that "*Every kind of beasts, and of birds, and of* "*serpents, and things in the sea, is tamed, and hath been tamed, of* "*mankind*".[1]

It is a satisfaction to me to find that a green lizard has actually been procured for you in *Devonshire;* because it corroborates my discovery, which I made many years ago, of the same sort, on a sunny sandbank near *Farnham* in *Surrey*.[2] I am well acquainted with the south hams of *Devonshire;* and can suppose that district, from its southerly situation, to be a proper habitation for such animals in their best colours.

Since the ring-ousels of your vast mountains do certainly not forsake them against winter, our suspicions that those which visit this neighbourhood about *Michaelmas* are not *English* birds, but driven from the more northern parts of *Europe* by the frosts, are still more reasonable; and it will be worth your pains to endeavour to trace from whence they come, and to inquire why they make so very short a stay.[3]

In your account of your error with regard to the two species of herons, you incidentally gave me great entertainment in your description of the heronry at *Cressi-hall;* which is a curiosity I never could manage to see. Fourscore nests of such a bird on one tree is a rarity which I would ride half as many miles to have a sight of. Pray be sure to tell me in your next whose seat *Cressi-hall* is, and near what town it lies.[4] I have often thought

[1] *James*, chap. iii. 7.

[2] [The green lizards of this and the following letter were no doubt sand lizards (*Lacerta agilis*, L.). The green lizard of Guernsey and Southern Europe (*L. viridis*, L.) has not been found in Great Britain or Ireland.]

[3] [Pennant was wrong in supposing that the ring-ouzels wintered in the "vast mountains" (*i.e.*, of North Wales and Scotland); and thus for a time misled White in his speculations on the migration of this species.]

[4] *Cressi-hall* is near *Spalding*, in *Lincolnshire*

that those vast extents of fens have never been sufficiently explored. If half a dozen gentlemen, furnished with a good strength of water-spaniels, were to beat them over for a week, they would certainly find more species.

There is no bird, I believe, whose manners I have studied more than that of the *caprimulgus* (the goat-sucker), as it is a wonderful and curious creature: but I have always found that though sometimes it may chatter as it flies, as I know it does, yet in general it utters it's jarring note sitting on a bough; and I have for many an half hour watched it as it sat with it's under mandible quivering, and particularly this summer. It perches usually on a bare twig, with it's head lower than it's tail, in an attitude well expressed by your draughtsman in the folio *British Zoology*. This bird is most punctual in beginning it's song exactly at the close of day; so exactly that I have known it strike up more than once or twice just at the report of the *Portsmouth* evening gun, which we can hear when the weather is still. It appears to me past all doubt that it's notes are formed by organic impulse, by the powers of the parts of it's windpipe, formed for sound, just as cats pur.[1] You will credit me, I hope, when I assure you that, as my neighbours were assembled in an hermitage on the side of a steep hill where we drink tea, one of these churn-owls came and settled on the cross of that little straw edifice and began to chatter, and continued his note for many minutes: and we were all struck with wonder to find that the organs of that little animal, when put in motion, gave a sensible vibration to the whole building! This bird also sometimes makes a small squeak, repeated four or five times; and I have observed that to happen when the cock has been pursuing the hen in a toying way through the boughs of a tree.

It would not be at all strange if your bat, which you have procured, should prove a new one, since five species have been found in a neighbouring kingdom. The great sort that I men-

[1] [In the original letter, as sent to Pennant, the following passage occurs, which is omitted from the book (it precedes the paragraph in the text relative to this bird):—"There is a passage in the article Goatsucker, page 247" [of the "British Zoology"] "which you will pardon me for objecting to, as I always thought it exceptionable; and that is, 'This noise being made *only* in its flight, we suppose it to be caused by the resistance of the air against the hollow of its vastly extended mouth and throat; for it flies with both wide open, to take its prey'. Now, as the first line appears to me to be a false fact, the supposition of course falls to the ground, if it should prove so."—*Bell.*]

tioned is certainly a non-descript: I saw but one this summer, and that I had no opportunity of taking.[1]

Your account of the *Indian-grass* was entertaining. I am no angler myself; but inquiring of those that are, what they supposed that part of their tackle to be made of? they replied "of the intestines of a silkworm".

Though I must not pretend to great skill in entomology, yet I cannot say that I am ignorant of that kind of knowledge: I may now and then perhaps be able to furnish you with a little information.

The vast rains ceased with us much about the same time as with you, and since we have had delicate weather. Mr. *Barker*, who has measured the rain for more than thirty years, says, in a late letter, that more has fallen this year than in any he ever attended to; though, from *July* 1763 to *January* 1764, more fell than in any seven months of this year.

LETTER XXIII.

TO THE SAME.

Selborne, February 28, 1769.

Dear Sir,

It is not improbable that the *Guernsey* lizard and our green lizards may be specifically the same; all that I know is, that, when some years ago many *Guernsey* lizards were turned loose in *Pembroke* college garden, in the university of *Oxford*, they lived a great while, and seemed to enjoy themselves very well, but never bred. Whether this circumstance will prove any thing either way I shall not pretend to say.

I return you thanks for your account of *Cressi-hall*; but recollect, not without regret, that in *June* 1746 I was visiting for a week together at *Spalding*, without ever being told that such a curiosity was just at hand. Pray send me word in your next what sort of tree it is that contains such a quantity of herons' nests; and whether the heronry consists of a whole grove or wood, or only of a few trees.

It gave me satisfaction to find that we accorded so well about the *caprimulgus*: all I contended for was to prove that it often

[1] [Fifteen species of bat are now recorded from the British Islands. For the noctule, here called "the great sort," see note to Letter XXXVI. to Pennant.]

chatters sitting as well as flying; and therefore the noise was voluntary, and from organic impulse, and not from the resistance of the air against the hollow of its mouth and throat.

If ever I saw any thing like actual migration, it was last *Michaelmas-day*. I was travelling, and out early in the morning: at first there was a vast fog; but, by the time that I was got seven or eight miles from home towards the coast, the sun broke out into a delicate warm day. We were then on a large heath or common, and I could discern, as the mist began to break away, great numbers of swallows (*hirundines rusticæ*) clustering on the stunted shrubs and bushes, as if they had roosted there all night. As soon as the air became clear and pleasant they all were on the wing at once; and, by a placid and easy flight, proceeded on southward towards the sea: after this I did not see any more flocks, only now and then a straggler.

I cannot agree with those persons that assert that the swallow kind disappear some and some gradually, as they come, for the bulk of them seem to withdraw at once:[1] only some stragglers stay behind a long while, and do never, there is the greatest reason to believe, leave this island. Swallows seem to lay themselves up, and to come forth in a warm day, as bats do continually of a warm evening, after they have disappeared for weeks. For a very respectable gentleman assured me that, as he was walking with some friends under *Merton-wall* on a remarkably hot noon, either in the last week in *December* or the first week in *January*, he espied three or four swallows huddled together on the moulding of one of the windows of that college. I have frequently remarked that swallows are seen later at *Oxford* than elsewhere: is it owing to the vast massy buildings of that place, to the many waters round it, or to what else?[2]

When I used to rise in a morning last autumn, and see the swallows and martins clustering on the chimnies and thatch of the neighbouring cottages, I could not help being touched with a secret delight, mixed with some degree of mortification: with delight, to observe with how much ardour and punctuality those poor little birds obeyed the strong impulse towards migra-

[1] [White was here in error; swallows and martins leave gradually, travelling from their haunts to the coast in successive parties. Had he discovered this, he would have been saved much needless speculation, as will be seen further on. See Introduction, p. xxxv.]

[2] [Merton College, and particularly the southern side of it, looking on Christ Church meadow, is still a favourite haunt of belated swallows, owing no doubt to its sunny aspect and the abundance of insects in the meadow.]

tion, or hiding, imprinted on their minds by their great Creator; and with some degree of mortification, when I reflected that, after all our pains and inquiries, we are yet not quite certain to what regions they do migrate; and are still farther embarrassed to find that some do not actually migrate at all.

These reflections made so strong an impression on my imagination, that they became productive of a composition that may perhaps amuse you for a quarter of an hour when next I have the honour of writing to you.

LETTER XXIV.

TO THE SAME.

Selborne, May 29, 1769.

DEAR SIR,

THE *scarabæus fullo*[1] I know very well, having seen it in collections; but have never been able to discover one wild in its natural state. Mr. *Banks* told me he thought it might be found on the sea-coast.

On the thirteenth of *April* I went to the sheep-down, where the *ring-ousels* have been observed to make their appearance at spring and fall, in their way perhaps to the north or south; and was much pleased to see three birds about the usual spot. We shot a cock and a hen; they were plump and in high condition. The hen had but very small rudiments of eggs within her, which proves they are late breeders; whereas those species of the thrush kind that remain with us the whole year have fledged young before that time. In their crops was nothing very distinguishable, but somewhat that seemed like blades of vegetables nearly digested. In autumn they feed on haws and yew-berries, and in the spring on ivy-berries. I dressed one of these birds, and found it juicy and well-flavoured. It is remarkable that they make but a few days' stay in their spring visit, but rest near a fortnight at *Michaelmas*. These birds, from the observations of three springs and two autumns, are most punctual in their return; and exhibit a new migration unnoticed by the writers, who supposed they never were to be seen in any of the southern counties.

[1] [*Melolontha fullo*, F. This large cockchafer has often been taken on the Kentish coast, but is believed to be always imported from France.]

One of my neighbours lately brought me a new *salicaria*, which at first I suspected might have proved your willow-lark,[1] but, on a nicer examination, it answered much better to the description of that species which you shot at *Revesby*, in *Lincolnshire*.[2] My bird I describe thus: "It is a size less than the "grasshopper-lark; the head, back, and coverts of the wings, "of a dusky brown, without those dark spots of the grasshopper-"lark; over each eye is a milkwhite stroke; the chin and throat "are white, and the under parts of a yellowish white; the rump "is tawny, and the feathers of the tail sharp-pointed; the bill is "dusky and sharp, and the legs are dusky; the hinder claw long "and crooked". The person that shot it says that it sung so like a reed-sparrow that he took it for one; and that it sings all night: but this account merits farther inquiry. For my part, I suspect it is a second sort of *locustella*, hinted at by Dr. *Derham* in *Ray's Letters:* see p. 108. He also procured me a grasshopper-lark.

The question that you put with regard to those genera of animals that are peculiar to *America*, viz. how they came there, and whence? is too puzzling for me to answer; and yet so obvious as often to have struck me with wonder. If one looks into the writers on that subject little satisfaction is to be found. Ingenious men will readily advance plausible arguments to support whatever theory they shall chuse to maintain; but then the misfortune is, every one's hypothesis is each as good as another's, since they are all founded on conjecture. The late writers of this sort, in whom may be seen all the arguments of those that have gone before, as I remember, stock *America* from the western coast of *Africa* and the south of *Europe;* and then break down the Isthmus that bridged over the *Atlantic*.[3]

[1] For this *salicaria* see letter *August* 30, 1769.

[The Sedge-warbler. See next letter. "The remark of White's informant that the bird he procured 'sung so like a reed sparrow' is a mistake which a casual observer might easily make, since the sedge-warbler often sings concealed in a patch of reeds or sedge, while the unmusical reed-bunting (*Emberiza schoeniclus*), sitting conspicuously on a reed top, gets all the credit for the song" (Harting). The late Mr. Seebohm (*British Birds*, vol. i., p. 353) needlessly accused White of confusing this bird with the reed-warbler (*Acrocephalus streperus*, Vieill.), a bird apparently unknown to him, because he describes the upper parts as being "without those dark spots of the grasshopper-lark". Neither reed-warbler nor sedge-warbler has dark spots in the centre of the feathers answering exactly to those in the grasshopper-warbler.]

[2] [The seat of Sir Joseph Banks.]

[3] [Among the "late writers of this sort" was Buffon (*Histoire Naturelle*). Those who remember what a facile expedient writers on geographical distribution

But this is making use of a violent piece of machinery: it is a difficulty worthy of the interposition of a god! *"Incredulus odi."*

TO THOMAS PENNANT, ESQUIRE.

THE NATURALIST'S SUMMER-EVENING WALK.

—— equidem credo, quia sit divinitus illis
Ingenium. VIRG. Georg.

WHEN day declining sheds a milder gleam,
What time the may-fly[1] haunts the pool or stream;
When the still owl skims round the grassy mead,
What time the timorous hare limps forth to feed;
Then be the time to steal adown the vale,
And listen to the vagrant[2] cuckoo's tale;
To hear the clamorous[3] curlew call his mate,
Or the soft quail his tender pain relate;
To see the swallow sweep the dark'ning plain
Belated, to support her infant train;
To mark the swift in rapid giddy ring
Dash round the steeple, unsubdu'd of wing:
Amusive birds!—say where your hid retreat
When the frost rages and the tempests beat;
Whence your return, by such nice instinct led,
When spring, soft season, lifts her bloomy head?
Such baffled searches mock man's prying pride,
The GOD of NATURE is your secret guide!

have found in land-bridges, even between distant continents, and how seldom a land-bridge will bear the weight of any other foot than that of the speculator who made it, will share White's distrust. We now expect the constructor of land-bridges to attend to distances and soundings, and to bear in mind the great stability of the larger land-masses. Practical identity of flora and fauna on both sides of a strait may prove former land-connection, but it is a very different thing to infer such connection from the occurrence of a few species, even though closely allied, in widely distant lands.]

[1] The angler's may-fly, the *ephemera vulgata, Linn.*, comes forth from it's aurelia state, and emerges out of the water about six in the evening, and dies about eleven at night, determining the date of it's fly state in about five or six hours. They usually begin to appear about the 4th of *June*, and continue in succession for near a fortnight. See *Swammerdam, Derham, Scopoli, &c.*

[2] Vagrant cuckoo; so called because, being tied down by no incubation or attendance about the nutrition of it's young, it wanders without control.

[3] *Charadrius oedicnemus.*

While deep'ning shades obscure the face of day
To yonder bench leaf-shelter'd, let us stray,
Till blended objects fail the swimming sight,
And all the fading landscape sinks in night;
To hear the drowsy dor come brushing by
With buzzing wing, or the shrill[1] cricket cry;
To see the feeding bat glance through the wood;
To catch the distant falling of the flood;
While o'er the cliff th' awaken'd churn-owl hung
Through the still gloom protracts his chattering song;
While high in air, and pois'd upon his wings,
Unseen, the soft enamour'd[2] woodlark sings:
These, NATURE'S works, the curious mind employ,
Inspire a soothing melancholy joy:
As fancy warms, a pleasing kind of pain
Steals o'er the cheek, and thrills the creeping vein!
Each rural sight, each sound, each smell, combine;
The tinkling sheep-bell, or the breath of kine;
The new-mown hay that scents the swelling breeze,
Or cottage-chimney smoking through the trees.
The chilling night-dews fall:—away, retire;
For see, the glow-worm lights her amorous fire![3]

[1] *Gryllus campestris.*

[2] In hot summer nights woodlarks soar to a prodigious height and hang singing in the air.

[3] The light of the female glow-worm (as she often crawls up the stalk of a grass to make herself more conspicuous) is a signal to the male, which is a slender dusky *scarabæus.*

[*Lampyris noctiluca*, L.

"The use of the bright light of the female glow-worm has been subject to much discussion. The male is feebly luminous, as are the larvæ and even the eggs. It has been supposed by some authors that the light serves to frighten away enemies, and by others to guide the male to the female. At last, Mr. Belt (*The Naturalist in Nicaragua*, 1874, pp. 316-320) appears to have solved the difficulty: he finds that all the *Lampyridæ* which he has tried are highly distasteful to insectivorous mammals and birds. Hence it is in accordance with Mr. Bates' view, hereafter to be explained, that many insects mimic the *Lampyridæ* closely, in order to be mistaken for them, and thus to escape destruction. He further believes that the luminous species profit by being at once recognised as unpalatable. It is probable that the same explanation may be extended to the *Elaters*, both sexes of which are highly luminous. It is not known why the wings of the female glow-worm have not been developed; but in her present state she closely resembles a larva, and as larvæ are so largely preyed on by many animals, we can understand why she has been rendered so much more luminous and conspicuous than the male; and why the larvæ themselves are likewise luminous" (Darwin, *Descent of Man*, chap. x.).

In the glow-worm and some other *Lampyridæ* the female resembles a larva, while the male is fully winged; in these the eyes of the male are much larger than those of the female. In the majority of the species, however, the wings are well

Thus, e'er night's veil had half obscur'd the sky,
Th' impatient damsel hung her lamp on high:
True to the signal, by love's meteor led,
Leander hasten'd to his Hero's bed.[1]

I am, &c.

LETTER XXV.

TO THE SAME.

Selborne, Aug. 30, 1769.

DEAR SIR,

IT gives me satisfaction to find that my account of the *ousel migration* pleases you. You put a very shrewd question when you ask me how I know that their autumnal migration is southward? Was not candour and openness the very life of natural history, I should pass over this query just as a sly commentator does over a crabbed passage in a classic; but common ingenuousness obliges me to confess, not without some degree of shame, that I only reasoned in that case from analogy. For as all other autumnal birds migrate from the northward to us, to partake of our milder winters, and return to the northward again when the rigorous cold abates, so I concluded that the ring-ousels did the same, as well as their congeners the fieldfares; and especially as ring-

developed in both sexes, and there is little difference in the eyes. This fact seems to indicate that the perception of the light by the male is of importance to the species.

The light is emitted from the ventral surface of the 6th, 7th and 8th ventral segments, more particularly from the 6th and 7th. It proceeds from a yellowish fatty substance, which shines through the transparent skin. Moderate stimulation increases the emission of light, but anything which alarms the insect diminishes or extinguishes it, and captured glow-worms often cease to shine. The light is intermittent, flashes succeeding one another rapidly (80-100 in the minute). In the *Observations* (p. 344) White says that they put out their lamps between eleven and twelve, and shine no more that night. This is not always the case; we have seen them shine long after midnight. The light in both sexes is quenched after pairing, but the female glows again during egg-laying. The luminous segments glow when removed from the body; in oxygen they are said to become more luminous, and to go out in carbonic acid, hydrogen, sulphurous acid or in a vacuum. The luminiferous substance is fatty, and contains no phosphorus.

Glow-worms usually keep close by day, but climb up stems or low shrubs at night. The larvæ are carnivorous, feeding upon small molluscs, dead or alive. The adults feed upon plants, or, as appears to be the case with the males, not at all.

In the fire-flies (*Luciola*) of Southern Europe it is the gregarious males that shine; they possess large eyes, while the non-luminous female has small ones. The fire-flies of tropical America belong to a different family of beetles (*Elaters*).]

[1] See the story of *Hero* and *Leander*.

ousels are known to haunt cold mountainous countries: but I have good reason to suspect since that they may come to us from the westward; because I hear, from very good authority, that they breed on *Dartmore;* and that they forsake that wild district about the time that our visitors appear, and do not return till late in the spring.

I have taken a great deal of pains about your *salicaria* and mine, with a white stroke over it's eye and a tawny rump.[1] I have surveyed it alive and dead, and have procured several specimens; and am perfectly persuaded myself (and trust you will soon be convinced of the same) that it is no more nor less than the *passer arundinaceus minor* of *Ray.* This bird, by some means or other, seems to be entirely omitted in the *British Zoology;* and one reason probably was because it is so strangely classed in *Ray,* who ranges it among his *picis affines.* It ought no doubt to have gone among his *aviculæ caudâ unicolore,* and among your slender-billed small birds of the same division. *Linnæus* might with great propriety have put it into his genus of *motacilla;* and the *motacilla salicaria* of his *fauna suecica* seems to come the nearest to it. It is no uncommon bird, haunting the sides of ponds and rivers where there is covert, and the reeds and sedges of moors. The country people in some places call it the *sedge-bird.* It sings incessantly night and day during the breeding-time, imitating the note of a sparrow, a swallow, a sky-lark; and has a strange hurrying manner in it's song. My specimens correspond most minutely to the description of your *fen salicaria* shot near *Revesby.* Mr. *Ray* has given an excellent characteristic of it when he says, "*Rostrum & pedes in hâc aviculâ multò majores sunt quàm pro corporis ratione*". See letter *May* 29, 1769. [Letter XXIV.]

I have got you the egg of an *oedicnemus,* or stone-curlew, which was picked up in a fallow on the naked ground: there were two; but the finder inadvertently crushed one with his foot before he saw them.

When I wrote to you last year on reptiles, I wish I had not forgot to mention the faculty that snakes have of stinking *se defendendo.* I knew a gentleman who kept a tame snake, which was in it's person as sweet as any animal while in good humour and unalarmed; but as soon as a stranger, or a dog or cat, came in, it fell to hissing, and filled the room with such nauseous effluvia as rendered it hardly supportable. Thus the squnck, or stonck,

[1] [The sedge-warbler (*Acrocephalus phragmitis,* Bechst.). See preceding letter.]

of *Ray's Synop. Quadr.* is an innocuous and sweet animal; but, when pressed hard by dogs and men, it can eject such a most pestilent and fetid smell and excrement, that nothing can be more horrible.

A gentleman sent me lately a fine specimen of the *lanius minor cinerascens cum maculâ in scapulis albâ, Raii;*[1] which is a bird that, at the time of your publishing your two first volumes of *British Zoology,* I find you had not seen. You have described it well from *Edwards's* drawing.

LETTER XXVI.

TO THE SAME.

Selborne, December 8, 1769.

DEAR SIR,

I WAS much gratified by your communicative letter on your return from *Scotland,* where you spent, I find, some considerable time, and gave yourself good room to examine the natural curiosities of that extensive kingdom, both those of the islands, as well as those of the highlands. The usual bane of such expeditions is hurry; because men seldom allot themselves half the time they should do: but, fixing on a day for their return, post from place to place, rather as if they were on a journey that required dispatch, than as philosophers investigating the works of nature. You must have made, no doubt, many discoveries, and laid up a good fund of materials for a future edition of the *British Zoology;* and will have no reason to repent that you have bestowed so much pains on a part of *Great-Britain* that perhaps was never so well examined before.

It has always been matter of wonder to me that fieldfares, which are so congenerous to thrushes and blackbirds, should never chuse to breed in *England:* but that they should not think even the highlands cold and northerly, and sequestered enough, is a circumstance still more strange and wonderful. The ring-ousel, you find, stays in *Scotland* the whole year round; so that we have reason to conclude that those migrators that visit us for a short space every autumn do not come from thence.

And here, I think, will be the proper place to mention that

[1] [Probably the woodchat shrike (*Lanius pomeranus*, Sparrm.), but it is curious that White does not mention the red crown and nape of this beautiful bird.]

those birds were most punctual again in their migration this autumn, appearing, as before, about the 30th of *September:* but their flocks were larger than common, and their stay protracted somewhat beyond the usual time. If they came to spend the whole winter with us, as some of their congeners do, and then left us, as they do, in spring, I should not be so much struck with the occurrence, since it would be similar to that of the other winter birds of passage; but when I see them for a fortnight at *Michaelmas,* and again for about a week in the middle of *April,* I am seized with wonder, and long to be informed whence these travellers come, and whither they go, since they seem to use our hills merely as an inn or baiting place.

Your account of the greater brambling, or snow-fleck,[1] is very amusing; and strange it is that such a short-winged bird should delight in such perilous voyages over the northern ocean! Some country people in the winter time have every now and then told me that they have seen two or three white larks on our downs; but, on considering the matter, I begin to suspect that these are some stragglers of the birds we are talking of, which sometimes perhaps may rove so far to the southward.

It pleases me to find that white hares are so frequent on the *Scottish* mountains, and especially as you inform me that it is a distinct species; for the quadrupeds of *Britain* are so few, that every new species is a great acquisition.[2]

The eagle-owl,[3] could it be proved to belong to us, is so majestic a bird, that it would grace our *fauna* much. I never was informed before where wild-geese are known to breed.

You admit, I find, that I have proved your *fen salicaria* to be the lesser reed-sparrow of *Ray:* and I think that you may be secure that I am right; for I took very particular pains to clear

[1] [The snow-bunting (*Emberiza nivalis*, L.), a species which visits the south of England every hard winter, and is often described by country people as a white lark.]

[2] [In Russia, Scandinavia and Iceland our common hare (*Lepus timidus*, L.) is replaced by the blue or mountain hare (*L. variabilis*, Pall.), which occurs in Scotland and Ireland also. The mountain hare is characteristic of arctic and alpine regions in the old world. It is structurally distinguished by the shortness of the ears. In winter the fur changes to white, except at the tips of the ears. In Scotland the change is often only partial, and in Ireland it does not occur at all, a difference which led Yarrell to regard the Irish hare as a distinct species (*L. hibernicus*). The polar hare (*L. glacialis*) is not, so far as is known, structurally different from *L. variabilis*. It is white all the year round, and produces more young in a litter, seven or eight instead of four or five.]

[3] [*Bubo ignavus*, Forst., an occasional migrant to the Orkneys, Shetlands, and northern Scotland.]

up that matter, and had some fair specimens; but, as they were not well preserved, they are decayed already. You will, no doubt, insert it in it's proper place in your next edition. Your additional plates will much improve your work.

De Buffon, I know, has described the water shrew-mouse: but still I am pleased to find you have discovered it in *Lincolnshire*, for the reason I have given in the article on the white hare.[1]

As a neighbour was lately plowing in a dry chalky field, far removed from any water, he turned out a water-rat, that was curiously laid up in an *hybernaculum* artificially formed of grass and leaves. At one end of the *burrow* lay above a gallon of potatoes regularly stowed, on which it was to have supported itself for the winter. But the difficulty with me is how this *amphibius mus* came to fix it's winter station at such a distance from the water. Was it determined in it's choice of that place by the mere accident of finding the potatoes which were planted there; or is it the constant practice of the aquatic-rat to forsake the neighbourhood of the water in the colder months?

Though I delight very little in analogous reasoning, knowing how fallacious it is with respect to natural history; yet, in the following instance, I cannot help being inclined to think it may conduce towards the explanation of a difficulty that I have mentioned before, with respect to the invariable early retreat of the *hirundo apus*, or swift, so many weeks before its congeners; and that not only with us, but also in *Andalusia*, where they also begin to retire about the beginning of *August*.

The great large bat[2] (which by the by is at present a nondescript in *England*, and what I have never been able yet to procure) retires or migrates very early in the summer: it also ranges very high for it's food, feeding in a different region of the air; and that is the reason I never could procure one. Now this is exactly the case with the swifts; for they take their food in a more exalted region than the other species, and are very seldom seen hawking for flies near the ground, or over the surface of the

[1] [Some years since I observed the water-shrew (*Crossopus fodiens*) in the stream which passes in front of the Grange Farm in Selborne. It was hunting at the bottom of the water among the aquatic plants for insects, and was so flattened that the white of the belly was conspicuous as a narrow margin on each side of the black back, forming a striking and pretty object. I found also in my garden a specimen, recently killed, of the black-bellied variety, formerly known as *Sorex remifer*. It was far from any water.—*Bell.*]

[2] The little bat appears almost every month in the year; but I have never seen the large ones till the end of *April*, nor after *July*. They are most common in *June*, but never in any plenty: are a rare species with us.

water. From hence I would conclude that these *hirundines*, and the larger bats, are supported by some sorts of high-flying gnats, scarabs, or *phalænæ*, that are of short continuance; and that the short stay of these strangers is regulated by the defect of their food.

By my journal it appears that curlews[1] clamoured on to *October* the thirty-first; since which I have not seen or heard any. Swallows were observed on to *November* the third.

LETTER XXVII.

TO THE SAME.

Selborne, Feb. 22, 1770.

DEAR SIR,

HEDGE-HOGS abound in my gardens and fields. The manner in which they eat their roots of the plantain in my grass-walks is very curious: with their upper mandible, which is much longer than their lower, they bore under the plant, and so eat the root off upwards, leaving the tuft of leaves untouched.[2] In this respect they are serviceable, as they destroy a very troublesome weed; but they deface the walks in some measure by digging little round holes. It appears, by the dung that they drop upon the turf, that beetles are no inconsiderable part of their food. In *June* last I procured a litter of four or five young hedge-hogs, which appeared to be about five or six days old; they, I find, like puppies, are born blind, and could not see when they came to my hands. No doubt their spines are soft and flexible at the time of their birth, or else the poor dam would have but a bad time of it in the critical moment of parturition: but it is plain that they soon harden; for these little pigs had such stiff prickles on their backs and sides as would easily have fetched blood, had they not been handled with caution. Their spines are quite white at this

[1] ["Curlew" is always used by White for stone curlew. The common curlew (*Numenius arquata*, L.), a very different bird, is not mentioned by him.]

[2] ["Rusticus" (Edward Newman) in his *Letters* says: "In a grass walk I saw some flattened plants of the common plantain withering and half dead; by the side of each I found the hole bored, as White supposed, by the long upper mandible of 'Hoggy,' but it was scarcely big enough to admit a lead pencil, and so round and smooth that I said directly to myself, ''Tis the burrow of a night-eating caterpillar'. I got a trowel and in a trice the fellow was unearthed; and he afterwards turned to a 'ghost-moth' or 'yellow underwing,' I cannot say which, for both came out in one cage."—Quoted from Harting's ed.]

age; and they have little hanging ears, which I do not remember to be discernible in the old ones. They can, in part, at this age draw their skin down over their faces; but are not able to contract themselves into a ball, as they do, for the sake of defence, when full grown. The reason, I suppose, is, because the curious muscle that enables the creature to roll itself up in a ball was not then arrived at it's full tone and firmness.[1] Hedge-hogs make a deep and warm *hybernaculum* with leaves and moss, in which they conceal themselves for the winter: but I never could find that they stored in any winter provision, as some quadrupeds certainly do.

I have discovered an anecdote[2] with respect to the fieldfare (*turdus pilaris*), which I think is particular enough:[3] this bird, though it sits on trees in the day-time, and procures the greatest part of it's food from white-thorn hedges; yea, moreover, builds on very high trees; as may be seen by the *fauna suecica;* yet always appears with us to roost on the ground. They are seen to come in flocks just before it is dark, and to settle and nestle among the heath on our forest. And besides, the larkers, in dragging their nets by night, frequently catch them in the wheat-stubbles; while the bat-fowlers, who take many red-wings in the hedges, never entangle any of this species. Why these birds, in the matter of roosting, should differ from all their congeners, and from themselves also with respect to their proceedings by day, is a fact for which I am by no means able to account.

I have somewhat to inform you of concerning the *moose-deer;* but in general foreign animals fall seldom in my way: my little intelligence is confined to the narrow sphere of my own observations at home.

[1] [There is one use of the hedgehog's armour which I have never seen mentioned, but which I had repeated opportunities of verifying in one which I kept myself. Running about a small yard at the back of the house, which overhung an area, it would go to the very edge; and looking over as if to ascertain if the descent were safe, it would roll up into a ball in the very act of throwing itself down; and, falling upon its elastic spines, it would, in a few seconds after alighting upon the stones, open and run off, wholly unhurt by this voluntary fall of at least ten feet.—*Bell.*]

[2] [Here and elsewhere in the *Letters* Gilbert White uses the word *anecdote* in the original sense of *a piece of unpublished information.* Thus in a letter to his brother John he says: "Be so good as not to forestall my cobweb-shower. I wish I had two or three dozen more of such *anecdotes.*" The word was of recent introduction (from the French) at this time.]

[3] ["Particular," *i.e.*, noteworthy. The fieldfare is not averse to nesting as well as roosting on the ground where trees are scarce or absent, and certainly does not affect "very high trees" in the extreme north of Scandinavia, but rather birches, alders, etc.]

LETTER XXVIII.

TO THE SAME.

Selborne, March, 1770.

On *Michaelmas-day* 1768 I managed to get a sight of the female moose belonging to the duke of *Richmond*, at *Goodwood;* but was greatly disappointed, when I arrived at the spot, to find that it died, after having appeared in a languishing way for some time, on the morning before. However, understanding that it was not stripped, I proceeded to examine this rare quadruped: I found it in an old green-house, slung under the belly and chin by ropes, and in a standing posture; but, though it had been dead for so short a time, it was in so putrid a state that the stench was hardly supportable. The grand distinction between this deer, and any other species that I have ever met with, consisted in the strange length of it's legs; on which it was tilted up much in the manner of the birds of the *grallæ* order. I measured it, as they do an horse, and found that, from the ground to the wither, it was just five feet four inches; which height answers exactly to sixteen hands, a growth that few horses arrive at: but then, with this length of legs, it's neck was remarkably short, no more than twelve inches; so that, by straddling with one foot forward and the other backward, it grazed on the plain ground, with the greatest difficulty, between it's legs: the ears were vast and lopping, and as long as the neck; the head was about twenty inches long, and ass-like; and had such a redundancy of upper lip as I never saw before, with huge nostrils. This lip, travellers say, is esteemed a dainty dish in *North America.* It is very reasonable to suppose that this creature supports itself chiefly by browsing of trees, and by wading after water plants; towards which way of livelihood the length of legs and great lip must contribute much. I have read somewhere that it delights in eating the *nymphæa,* or water-lily. From the fore-feet to the belly behind the shoulder it measured three feet and eight inches: the length of the legs before and behind consisted a great deal in the *tibia,* which was strangely long; but, in my haste to get out of the stench, I forgot to measure that joint exactly. It's scut seemed to be about an inch long; the colour was a grizzly black; the mane about four inches long; the fore-hoofs were upright and shapely, the hind flat and splayed. The spring before it was

only two years old, so that most probably it was not then come to it's growth. What a vast tall beast must a full grown stag be! I have been told some arrive at ten feet and an half! This poor creature had at first a female companion of the same species, which died the spring before. In the same garden was a young stag, or red deer, between whom and this moose it was hoped that there might have been a breed; but their inequality of height must have always been a bar to any commerce of the amorous kind. I should have been glad to have examined the teeth, tongue, lips, hoofs, etc., minutely; but the putrefaction precluded all further curiosity. This animal, the keeper told me, seemed to enjoy itself best in the extreme frost of the former winter. In the house they showed me the horn of a male moose, which had no front-antlers, but only a broad palm with some snags on the edge. The noble owner of the dead moose proposed to make a skeleton of her bones.

Please to let me hear if my female moose corresponds with that you saw; and whether you think still that the *American* moose and *European* elk are the same creature.[1] I am,

With the greatest esteem, etc.

LETTER XXIX.[2]

TO THE SAME.

Selborne, May 12, 1770.

DEAR SIR,

LAST month we had such a series of cold turbulent weather, such a constant succession of frost, and snow, and hail, and tempest, that the regular migration or appearance of the summer birds

[1] [The American moose is probably identical with the European elk, though some naturalists have attempted to distinguish the species by slight differences in the horns.

[2] [In the original letter sent to Pennant, but not retained in the copy sent to the press, is the following paragraph, which appeared to me to be quite worth preserving.

"Though you are embarked in a more extensive plan of natural history, yet I am glad to find that you do by no means give up the Brit. Zoology. That, I think, should be your principal object; and I hope you will continue to revise it at your leisure, and to retouch it until you have made it as perfect as the nature of the work will admit of. If people who live in the country would take a little pains, daily observations might be made with respect to animals, and particularly regarding their life and conversation, their actions and economy, which are the life and soul of natural history."—*Bell.*]

was much interrupted. Some did not shew themselves (at least were not heard) till weeks after their usual time; as the *black-cap* and *white-throat;* and some have not been heard yet, as the *grasshopper-lark* and largest *willow-wren.* As to the *fly-catcher,* I have not seen it; it is indeed one of the latest, but should appear about this time: and yet, amidst all this meteorous strife and war of the elements, two swallows discovered themselves as long ago as the eleventh of *April,* in frost and snow; but they withdrew quickly, and were not visible again for many days. House-martins, which are always more backward than swallows, were not observed till *May* came in.

Among the *monogamous* birds several are to be found, after pairing-time, single, and of each sex: but whether this state of celibacy is matter of choice or necessity, is not so easily discoverable. When the house-sparrows deprive my martins of their nests, as soon as I cause one to be shot, the other, be it cock or hen, presently procures a mate, and so for several times following.[1]

I have known a dove-house infested by a pair of white owls, which made great havock among the young pigeons: one of the owls was shot as soon as possible; but the survivor readily found a mate, and the mischief went on. After some time the new pair were both destroyed, and the annoyance ceased.[2]

Another instance I remember of a sportsman, whose zeal for the increase of his game being greater than his humanity, after pairing-time he always shot the cock-bird of every couple of partridges upon his grounds; supposing that the rivalry of many males interrupted the breed: he used to say, that, though he had widowed the same hen several times, yet he found she was still provided with a fresh paramour, that did not take her away from her usual haunt.

Again; I knew a lover of setting, an old sportsman, who has

[1] [This paragraph deserves to be noted as a good example of White's manner, at once terse and clear, of recording the results of long and accurate observation. The first sentence of the next letter seems to indicate that he was at this time taking special pains to be brief, from annoyance at the prolixity of French writers; and indeed he almost overdoes it. We should have been glad of more facts, both as to the bachelor birds and the depredations of the sparrows. It is interesting, though melancholy, to find that the persecution of the martins by house sparrows has been going on for at least a hundred and thirty years.]

[2] [Bell refers to Waterton's *Essays* (1st series, p. 14), where this charge against the barn owl is repudiated. It is of course not impossible that an individual barn owl may take a fancy to young pigeons; but the regular food is rats and mice, and the species should be carefully preserved. See some valuable facts collected by Mr. Norgate, in Seebohm's *British Birds,* vol i., p. 149.]

often told me that soon after harvest he has frequently taken small coveys of partridges, consisting of cock-birds alone; these he pleasantly used to call old bachelors.

There is a propensity belonging to common house-cats that is very remarkable; I mean their violent fondness for fish, which appears to be their most favourite food: and yet nature in this instance seems to have planted in them an appetite that, unassisted, they know not how to gratify: for of all quadrupeds cats are the least disposed towards water; and will not, when they can avoid it, deign to wet a foot, much less to plunge into that element.

Quadrupeds that prey on fish are amphibious: such is the otter, which by nature is so well formed for diving, that it makes great havock among the inhabitants of the waters. Not supposing that we had any of those beasts in our shallow brooks, I was much pleased to see a male otter brought to me, weighing twenty-one pounds, that had been shot on the bank of our stream below the *Priory*, where the rivulet divides the parish of *Selborne* from *Harteley-wood*.

LETTER XXX.

TO THE SAME.

Selborne, Aug. 1, 1770.

DEAR SIR,

THE *French*, I think, in general are strangely prolix in their natural history.[1] What *Linnæus* says with respect to insects holds good in every other branch: "*Verbositas præsentis sæculi, "calamitas artis*".

Pray how do you approve of *Scopoli's* new work? As I admire his *Entomologia*, I long to see it.

I forgot to mention in my last letter (and had not room to insert in the former) that the male moose, in rutting time, swims from island to island, in the lakes and rivers of *North-America*, in pursuit of the females. My friend, the chaplain, saw one killed

[1] [In a letter to his brother John, Jan. 25, 1771, Gilbert White says: "Geoffroy no doubt is too verbose; so are all his countrymen". Besides Geoffroy he may have had Réaumur and Buffon in his mind. White's acquaintance with them was probably slight, and the remark seems a little harsh to those who have read these naturalists, and especially Réaumur, with never-ending pleasure and profit.]

in the water as it was on that errand in the river St. *Lawrence:* it was a monstrous beast, he told me; but he did not take the dimensions.

When I was last in town our friend Mr. *Barrington* most obligingly carried me to see many curious sights. As you were then writing to him about horns, he carried me to see many strange and wonderful specimens. There is, I remember, at Lord *Pembroke's,* at *Wilton,* an horn room furnished with more than thirty different pairs; but I have not seen that house lately.

Mr. *Barrington* shewed me many astonishing collections of stuffed and living birds from all quarters of the world. After I had studied over the latter for a time, I remarked that every species almost that came from distant regions, such as *South America,* the coast of *Guinea,* &c., were thick-billed birds of the *loxia* and *fringilla* genera; and no *motacillæ,* or *muscicapæ,* were to be met with. When I came to consider, the reason was obvious enough; for the hard-billed birds subsist on seeds which are easily carried on board; while the soft-billed birds, which are supported by worms and insects, or, what is a *succedaneum* for them, fresh raw meat, can meet with neither in long and tedious voyages. It is from this defect of food that our collections (curious as they are) are defective, and we are deprived of some of the most delicate and lively genera.[1]

I am, &c.

LETTER XXXI.

TO THE SAME.

Selborne, Sept. 14, 1770.

Dear Sir,

You saw, I find, the ring-ousels again among their native crags; and are farther assured that they continue resident in those cold regions the whole year.[2] From whence then do our ring-ousels migrate so regularly every *September,* and make their appearance again, as if in their return, every *April?* They are more early

[1] [This difficulty has of course been since overcome, as may be abundantly illustrated in the Zoological Gardens.]

[2] [See Letter XXII. to Pennant, note. Mr. Harting suggests that Pennant's informant confused the ring-ouzel and the water-ouzel or dipper.]

this year than common, for some were seen at the usual hill on the fourth of this month.

An observing *Devonshire* gentleman tells me that they frequent some parts of *Dartmoor,* and breed there ; but leave those haunts about the end of *September* or beginning of *October,* and return again about the end of *March.*

Another intelligent person assures me that they breed in great abundance all over the *Peak* of *Derby,* and are called there *Torousels ;* withdraw in *October* and *November,* and return in spring. This information seems to throw some light on my new migration.

Scopoli's[1] new work (which I have just procured) has it's merit in ascertaining many of the birds of the *Tirol* and *Carniola.* Monographers, come from whence they may, have, I think, fair pretence to challenge some regard and approbation from the lovers of natural history ; for, as no man can alone investigate all the works of nature, these partial writers may, each in their department, be more accurate in their discoveries, and freer from errors, than more general writers ; and so by degrees may pave the way to an universal correct natural history. Not that *Scopoli* is so circumstantial and attentive to the life and conversation of his birds as I could wish : he advances some false facts ; as when he says of the *hirundo urbica* that *"pullos extra nidum non nutrit".* This assertion I know to be wrong from repeated observation this summer ; for house-martins do feed their young flying, though it must be acknowledged not so commonly as the house-swallow ; and the feat is done in so quick a manner as not to be perceptible to indifferent observers. He also advances some (I was going to say) improbable facts ; as when he says of the woodcock that *"pullos rostro portat fugiens ab hoste".* But candour forbids me to say absolutely that any fact is false, because I have never been witness to such a fact. I have only to remark that the long unwieldy bill of the woodcock is perhaps the worst adapted of any among the winged creation for such a feat of natural affection.[2]

I am, &c.

[1] *Annus Primus Historico-Naturalis.*

[2] [Prof. Newton contributed the following succinct note to Bell's edition : "That the bill assists materially in carrying off and particularly in steadying the young bird while being carried seems to be established ; but the most efficient instruments are the parent's thighs, beneath which the chick is grasped, while the head and bill are recurved beneath".]

LETTER XXXII.

TO THE SAME.

Selborne, October 29, 1770.

DEAR SIR,

AFTER an ineffectual search in *Linnæus, Brisson,* &c., I begin to suspect that I discern my brother's *hirundo hyberna* in *Scopoli*'s new discovered *hirundo rupestris,* p. 167. His description of "*Supra murina, subtus albida; rectrices maculâ ovali albâ in latere* "*interno; pedes nudi, nigri; rostrum nigrum; remiges obscuriores* "*quam plumæ dorsales; rectrices remigibus concolores; caudâ emar-* "*ginatâ, nec forcipatâ;*" agrees very well with the bird in question: but when he comes to advance that it is "*statura* "*hirundinis urbicæ,*" and that "*definitio hirundinis ripariæ Linnæi* "*huic quoque convenit,*" he in some measure invalidates all he has said; at least he shews at once that he compares them to these species merely from memory: for I have compared the birds themselves, and find they differ widely in every circumstance of shape, size, and colour. However, as you will have a specimen, I shall be glad to hear what your judgment is in the matter.

Whether my brother is forestalled in his non-descript or not, he will have the credit of first discovering that they spend their winters under the warm and sheltery shores of *Gibraltar* and *Barbary.*

Scopoli's characters of his ordines and genera are clean, just, and expressive, and much in the spirit of *Linnæus.* These few remarks are the result of my first perusal of *Scopoli's Annus Primus.*

The bane of our science is the comparing one animal to the other by memory: for want of caution in this particular *Scopoli* falls into errors: he is not so full with regard to the manners of his indigenous birds as might be wished, as you justly observe: his Latin is easy, elegant, and expressive, and very superior to *Kramer*'s.[1]

I am pleased to see that my description of the *moose* corresponds so well with yours.

I am, &c.

[1] See his *Elenchus vegetabilium et animalium per Austriam inferiorem,* &c.

LETTER XXXIII.

TO THE SAME.

Selborne, Nov. 26, 1770.

DEAR SIR,

I WAS much pleased to see, among the collection of birds from *Gibraltar*, some of those short-winged *English* summer-birds of passage, concerning whose departure we have made so much inquiry. Now if these birds are found in *Andalusia* to migrate to and from *Barbary*, it may easily be supposed that those that come to us may migrate back to the continent, and spend their winters in some of the warmer parts of *Europe*. This is certain, that many soft-billed birds that come to *Gibraltar* appear there only in spring and autumn, seeming to advance in pairs towards the northward, for the sake of breeding during the summer months; and retiring in parties and broods toward the south at the decline of the year: so that the rock of *Gibraltar* is the great rendezvous, and place of observation, from whence they take their departure each way towards *Europe* or *Africa*.[1] It is therefore no mean discovery, I think, to find that our small short-winged summer birds of passage are to be seen spring and autumn on the very skirts of *Europe;* it is a presumptive proof of their emigrations.

Scopoli seems to me to have found the *hirundo melba*, the great *Gibraltar* swift, in *Tirol*, without knowing it.[2] For what is his *hirundo alpina* but the afore-mentioned bird in other words? Says he "*Omnia prioris*" (meaning the swift) "*sed pectus album; paulo major priore*". I do not suppose this to be a new species. It is true also of the *melba*, that "*nidificat in excelsis Alpium rupibus*". *Vid. Annum Primum.*

My *Sussex* friend, a man of observation and good sense, but no naturalist, to whom I applied on account of the *stone-curlew, oedicnemus*, sends me the following account: "In looking over "my Naturalist's Journal for the month of *April*, I find the "*stone-curlews* are first mentioned on the seventeenth and eigh- "teenth, which date seems to me rather late. They live with

[1] [Col. Irby's *Ornithology of the Straits of Gibraltar* has recently made us fully acquainted with migration at this point.]

[2] [The alpine swift (*Cypselus melba*, L.) was no doubt the bird described by Scopoli, with white breast (*pectus album*), and also that found by John White at Gibraltar. See Irby, *op. cit.*, p. 214.]

"us all the spring and summer, and at the beginning of autumn "prepare to take leave by getting together in flocks. They "seem to me a bird of passage that may travel into some dry hilly "country south of us, probably Spain, because of the abundance "of sheep-walks in that country; for they spend their summers "with us in such districts. This conjecture I hazard, as I have "never met with any one that has seen them in *England* in the "winter. I believe they are not fond of going near the water, "but feed on earth-worms, that are common on sheep-walks and "downs. They breed on fallows and lay-fields abounding with "grey mossy flints, which much resemble their young in colour; "among which they skulk and conceal themselves. They make "no nest, but lay their eggs on the bare ground, producing in "common but two at a time. There is reason to think their "young run soon after they are hatched; and that the old ones "do not feed them, but only lead them about at the time of "feeding, which, for the most part, is in the night." Thus far my friend.

In the manners of this bird you see there is something very analogous to the bustard, whom it also somewhat resembles in aspect and make, and in the structure of it's feet.

For a long time I have desired my relation to look out for these birds in *Andalusia;* and now he writes me word that, for the first time, he saw one dead in the market on the 3rd of *September.*

When the *oedicnemus* flies it stretches out it's legs straight behind, like an heron.[1]

I am, &c.

LETTER XXXIV.

TO THE SAME.

Selborne, March 30, 1771.

Dear Sir,

There is an insect with us, especially on chalky districts, which is very troublesome and teasing all the latter end of the summer, getting into people's skins, especially those of women and children, and raising tumours which itch intolerably.

[1] [See Letters XVI., XXI., XXXIII. to Pennant, LIX. to Barrington, and the *Observations on Nature.*]

This animal (which we call an harvest bug) is very minute, scarce discernible to the naked eye; of a bright scarlet colour, and of the genus of *Acarus*.[1] They are to be met with in gardens on kidney-beans, or any legumens; but prevail only in the hot months of summer. Warreners, as some have assured me, are much infested by them on chalky downs; where these insects swarm sometimes to so infinite a degree as to discolour their nets, and to give them a reddish cast, while the men are so bitten as to be thrown into fevers.

There is a small long shining fly in these parts very troublesome to the housewife, by getting into the chimnies, and laying it's eggs in the bacon while it is drying: these eggs produce maggots called *jumpers*, which, harbouring in the gammons and best parts of the hogs, eat down to the bone, and make great waste. This fly I suspect to be a variety of the *musca putris* of *Linnæus*: it is to be seen in the summer in farm-kitchens on the bacon-racks and about the mantel-pieces, and on the ceilings.[2]

The insect that infests turnips and many crops in the garden (destroying often whole fields while in their seedling leaves) is an animal that wants to be better known. The country people here call it the *turnip-fly* and *black-dolphin*; but I know it to be one of the *coleoptera*; the "*chrysomela oleracea, saltatoria, femori-*" "*bus posticis crassissimis*". In very hot summers they abound to an amazing degree, and, as you walk in a field or in a garden, make a pattering like rain, by jumping on the leaves of the turnips or cabbages.[3]

There is an *Oestrus*, known in these parts to every ploughboy; which, because it is omitted by *Linnæus*, is also passed over by late writers, and that is the *curvicauda* of old *Moufet*, mentioned by *Derham* in his Physico-theology, p. 250: an insect worthy of remark for depositing it's eggs as it flies in so dexterous a manner on the single hairs of the legs and flanks of grass-horses.[4] But then *Derham* is mistaken when he advances that this *Oestrus* is the parent of that wonderful star-tailed maggot which he

[1] [The harvest-bug is usually an immature acarus, having only six legs; the young of *Tetranychus autumnalis*, Shaw.]

[2] [The bacon-fly is very similar to (perhaps identical with) the cheese-fly (*Piophila casei*, L.), whose larvæ, the well-known "cheese-hoppers," are described by Swammerdam in the *Biblia Naturæ*. The bacon-fly has been described hy Haliday as *P. luteata*. It is said to be stouter than the cheese-fly, with shorter and thicker legs and yellower wings.]

[3] [The turnip-flea beetle (*Haltica* or *Phyllotreta nemorum*, L.).]

[4] [The horse-bot (*Gastrophilus equi*, Fab.).]

mentions afterwards; for more modern entomologists have discovered that singular production to be derived from the egg of the *musca chamæleon:* see *Geoffroy*, t. 17, f. 4.[1]

A full history of noxious insects hurtful in the field, garden, and house, suggesting all the known and likely means of destroying them, would be allowed by the public to be a most useful and important work. What knowledge there is of this sort lies scattered, and wants to be collected; great improvements would soon follow of course. A knowledge of the properties, œconomy, propagation, and in short of the life and conversation of these animals, is a necessary step to lead us to some method of preventing their depredations.

As far as I am a judge, nothing would recommend entomology more than some neat plates that should well express the *generic distinctions* of insects according to *Linnæus;* for I am well assured that many people would study insects, could they set out with a more adequate notion of those distinctions than can be conveyed at first by words alone.

LETTER XXXV.

TO THE SAME.

Selborne, 1771.

Dear Sir,

Happening to make a visit to my neighbour's peacocks, I could not help observing that the trains of those magnificent birds appear by no means to be their tails; those long feathers growing not from their *uropygium*, but all up their backs. A range of short brown stiff feathers, about six inches long, fixed in the *uropygium*, is the real tail, and serves as the *fulcrum* to prop the train, which is long and top-heavy, when set on end. When the train is up, nothing appears of the bird before but it's head and neck; but this would not be the case were those long feathers fixed only in the rump, as may be seen by the turkey-cock when in a strutting attitude. By a strong muscular vibration these birds can make the shafts of their long feathers clatter like the swords of a sword-dancer; they then trample very quick with their feet, and run backwards towards the females.

[1] [*Stratiomys chamæleon*, L.]

I should tell you that I have got an uncommon *calculus ægogropila,* taken out of the stomach of a fat ox; it is perfectly round, and about the size of a large *Seville* orange; such are, I think, usually flat.

LETTER XXXVI.

TO THE SAME.

Sept. 1771.

Dear Sir,

The summer through I have seen but two of that large species of bat which I call *vespertilio altivolans,*[1] from it's manner of feeding high in the air: I procured one of them, and found it to be a male; and made no doubt, as they accompanied together, that the other was a female: but, happening in an evening or two to procure the other likewise, I was somewhat disappointed, when it appeared to be also of the same sex. This circumstance, and the great scarcity of this sort, at least in these parts, occasions some suspicions in my mind whether it is really a species, or whether it may not be the male part of the more known species, one of which may supply many females; as is known to be the case in sheep, and some other quadrupeds. But this doubt can only be cleared by a farther examination, and some attention to the sex, of more specimens: all that I know at present is, that my two were amply furnished with the parts of generation much resembling those of a boar.

In the extent of their wings they measured fourteen inches and an half; and four inches and an half from the nose to the tip of the tail: their heads were large, their nostrils bilobated, their shoulders broad and muscular; and their whole bodies fleshy and plump. Nothing could be more sleek and soft than their fur, which was of a bright chestnut colour; their maws were full of food, but so macerated that the quality could not be distinguished; their livers, kidnies, and hearts, were large, and their bowels covered with fat. They weighed each, when entire, full one ounce and one drachm. Within the ear there was some-

[1] [See Letter XXII. to Pennant. White's *Vespertilio altivolans* is the noctule (*Vesperugo noctula*, Schreb.). White first discovered it in Britain, but it had been previously found in France by Daubenton and Buffon. The noctule is widely distributed throughout the southern counties, reaching as far north as Yorkshire.]

what of a peculiar structure that I did not understand perfectly; but refer it to the observation of the curious anatomist. These creatures sent forth a very rancid and offensive smell.

LETTER XXXVII.

TO THE SAME.

Selborne, 1771.

DEAR SIR,

ON the twelfth of *July* I had a fair opportunity of contemplating the motions of the *caprimulgus*, or fern-owl, as it was playing round a large oak that swarmed with *scarabæi solstitiales*, or fern-chafers. The powers of it's wing were wonderful, exceeding, if possible, the various evolutions and quick turns of the swallow genus. But the circumstance that pleased me most was, that I saw it distinctly, more than once, put out it's short leg while on the wing, and, by a bend of the head, deliver somewhat into its mouth. If it takes any part of its prey with its foot, as I have now the greatest reason to suppose it does these chafers, I no longer wonder at the use of it's middle toe, which is curiously furnished with a serrated claw.[1]

Swallows and martins, the bulk of them I mean, have forsaken us sooner this year than usual; for, on *September* the twenty-second, they rendezvoused in a neighbour's walnut-tree, where it seemed probable they had taken up their lodging for the night. At the dawn of the day, which was foggy, they arose all together in infinite numbers, occasioning such a rushing from the strokes of their wings against the hazy air, as might be heard to a considerable distance: since that no flock has appeared, only a few stragglers.

Some swifts staid late, till the twenty-second of *August*—a

[1] [The use of this claw, serrated (*i.e.*, toothed) on the inner side, has never yet been determined. A good account of the explanations advanced will be found in Mr. Harting's *Summer Migrants*, p. 215 f. White's observation may certainly indicate *one* use to which the claw is put, and this is not invalidated by the fact that other birds, which do not take their food on the wing, *e.g.*, the stone curlew, also have the middle claw more or less serrated. The position of the serration, and the fact that in some birds the teeth have been found crammed with insects which infest the plumage, suggests that the claw may in some cases be used as a comb. But see Coues' *Field and General Ornithology*, p. 196.]

rare instance! for they usually withdraw within the first week.[1]

On *September* the twenty-fourth three or four ring-ousels appeared in my fields for the first time this season: how punctual are these visitors in their autumnal and spring migrations!

LETTER XXXVIII.

TO THE SAME.

Selborne, March 15, 1773.

DEAR SIR,

BY my journal for last autumn it appears that the house-martins bred very late, and staid very late in these parts; for, on the first of *October*, I saw young martins in their nests nearly fledged; and again, on the twenty-first of *October*, we had at the next house a nest full of young martins just ready to fly; and the old ones were hawking for insects with great alertness. The next morning the brood forsook their nest, and were flying round the village. From this day I never saw one of the swallow kind till *November* the third; when twenty, or perhaps thirty, house-martins were playing all day long by the side of the hanging wood, and over my fields. Did these small weak birds, some of which were nestlings twelve days ago, shift their quarters at this late season of the year to the other side of the northern tropic? Or rather, is it not more probable that the next church, ruin, chalk-cliff, steep covert, or perhaps sandbank, lake or pool (as a more northern naturalist would say), may become their *hybernaculum*, and afford them a ready and obvious retreat?[2]

We now begin to expect our vernal migration of ring-ousels every week. Persons worthy of credit assure me that ring-ousels were seen at *Christmas* 1770 in the forest of *Bere*, on the southern

[1] See letter lii. to Mr. Barrington.

[It is not uncommon to find a solitary swift as late as the first week of September.]

[2] [White here assumes that the martins he saw on November 3 were the same late broods that he had noted in October, and was thus led to guess that they had gone into some "hibernaculum" in the meantime. But his assumption was probably incorrect; the party seen in November 3 was no doubt composed of travellers from some other quarter. Had his curiosity taken him on a journey along the coast during the time of migration, he would have become aware of the gradual method of travelling adopted by these birds, and so have dispensed with the theory of the "hibernaculum".]

verge of this county.[1] Hence we may conclude that their migrations are only internal, and not extended to the continent southward, if they do at first come at all from the northern parts of this island only, and not from the north of *Europe*. Come from whence they will, it is plain, from the fearless disregard that they shew for men or guns, that they have been little accustomed to places of much resort. Navigators mention that in the *Isle of Ascension*, and other such desolate districts, birds are so little acquainted with the human form that they settle on men's shoulders; and have no more dread of a sailor than they would have of a goat that was grazing. A young man at *Lewes*, in *Sussex*, assured me that about seven years ago ring-ousels abounded so about that town in the autumn that he killed sixteen himself in one afternoon: he added further, that some had appeared since in every autumn; but he could not find that any had been observed before the season in which he shot so many. I myself have found these birds in little parties in the autumn cantoned all along the *Sussex* downs, wherever there were shrubs and bushes, from *Chichester* to *Lewes;* particularly in the autumn of 1770.

I am, &c.

LETTER XXXIX.

TO THE SAME.

Selborne, Nov. 9, 1773.

DEAR SIR,

As you desire me to send you such observations as may occur, I take the liberty of making the following remarks, that you may, according as you think me right or wrong, admit or reject what I here advance, in your intended new edition of the *British Zoology*.

The osprey[2] was shot about a year ago at *Frinsham-pond*, a great lake, at about six miles from hence, while it was sitting on the handle of a plough and devouring a fish: it used to precipitate itself into the water, and so take it's prey by surprise.

A great ash-coloured[3] butcher-bird was shot last winter in

[1] [Either the "persons worthy of credit" were not really such, or the occurrence was quite exceptional. In any case White's inference (that the migration was only internal) was too hasty.]

[2] *British Zoology*, vol. i., p. 128. [3] p. 161.

Tisted-park, and a red-backed butcher-bird at *Selborne:* they are *rarœ aves* in this country.[1]

Crows[2] go in pairs the whole year round.

Cornish choughs[3] abound, and breed on *Beachy-head* and on all the cliffs of the *Sussex* coast.[4]

The common wild-pigeon,[5] or stock-dove, is a bird of passage in the south of England, seldom appearing till towards the end of *November;* is usually the latest winter-bird of passage. Before our beechen woods were so much destroyed we had myriads of them, reaching in strings for a mile together as they went out in a morning to feed. They leave us early in spring; where do they breed?[6]

The people of *Hampshire* and *Sussex* call the missel-bird[7] the storm-cock, because it sings early in the spring in blowing showery weather; it's song often commences with the year: with us it builds much in orchards.

A gentleman assures me he has taken the nests of ring-ousels[8] on *Dartmoor:* they build in banks on the sides of streams.

Titlarks[9] not only sing sweetly as they sit on trees, but also as they play and toy about on the wing; and particularly while they are descending, and sometimes as they stand on the ground.[10]

Adanson's[11] testimony seems to me to be a very poor evidence that *European* swallows migrate during our winter to *Senegal:* he does not talk at all like an ornithologist; and probably saw only the swallows of that country, which I know build within Governor *O'Hara's* hall against the roof. Had he known *European* swallows, would he not have mentioned the species?

The *house-swallow* washes by dropping into the water as it flies: this species appears commonly about a week before the *house-martin,* and about ten or twelve days before the *swift.*

[1] [The two species of shrikes here mentioned are (1) the great grey shrike (*Lanius excubitor*, L.), a straggler to England in winter only, and (2) the red-backed shrike (*Lanius collurio*, L.), a familiar summer migrant. White can hardly have meant that the latter was shot at Selborne in *winter*, though his language seems to imply it.]

[2] [*Brit. Zool.*, vol. i., p.] 167. [3] 198.

[4] [The chough (*Pyrrhocorax graculus*, L.) has not bred on Beachy Head or any part of the coast east of Dorset for very many years. From Dorset to Cornwall it is still occasionally found.]

[5] [*Brit. Zool.*, vol. i., p.] 216. [6] [See note on Letter XLIV. to Pennant.]

[7] [*Brit. Zool.*, vol. i., p.] 224. [8] 229. [9] vol. ii., p. 237.

[10] [The tree-pipit (*Anthus trivialis*, L.). In Letter IX. to Barrington the same name is used apparently of the meadow-pipit, the *Alauda pratensis* of Ray; and it is at least doubtful whether he distinguished the two species.]

[11] [*Brit. Zool.*, vol. i., p.] 242.

In 1772 there were young house-martins[1] in their nest till *October* the twenty-third.

The *swift*[2] appears about *ten* or *twelve* days later than the *house-swallow: viz.* about the twenty-fourth or twenty-sixth of *April*.

Whin-chats and *stone-chatters*[3] stay with us the whole year.[4]

Some wheat-ears[5] continue with us the winter through.[6]

Wagtails, all sorts, remain with us all the winter.[7]

Bulfinches,[8] when fed on hempseed, often become wholly black.

We have vast flocks of *female* chaffinches[9] all the winter, with hardly any males among them.

When you say that in breeding-time the cock-snipes[10] make a bleating noise, and I a drumming (perhaps I should have rather said an humming), I suspect we mean the same thing. However, while they are playing about on the wing they certainly make a loud piping with their mouths: but whether that bleating or humming is ventriloquous, or proceeds from the motion of their wings, I cannot say; but this I know, that when this noise happens the bird is always descending, and his wings are violently agitated.[11]

Soon after the lapwings[12] have done breeding they congregate, and, leaving the moors and marshes, betake themselves to downs and sheep-walks.

Two years ago[13] last spring the little auk[14] was found alive and unhurt, but fluttering and unable to rise, in a lane a few miles

[1] [*Brit. Zool.*, vol. ii., p.] 244. [2] 245. [3] 270, 271.

[4] [As the whinchat (*Pratincola rubetra*, L.) does not remain with us in winter, as do a considerable number of stonechats (*P. rubicola*, L.), Mr. Harting has aptly suggested that White may have mistaken female stonechats for whinchats, a not unlikely blunder for one unprovided with a field-glass.]

[5] [*Brit. Zool.*, vol. ii., p.] 269. [6] [The wheatear migrates regularly.]

[7] [See note on Letter XIII. to Pennant.]

[8] [*Brit. Zool.*, vol. ii., p.] 300. [9] 306. [10] 358.

[11] ["I have observed the drumming of snipes in bright days at the beginning of April, and I could very clearly discern the manner in which the sound is produced. After rising high and crying *peet, peet, peet,* which is the snipe's vernal note, it lets itself drop obliquely through the air, keeping the wings motionless, but turning by some muscular contraction each individual quill sideways in the same manner that the bars of a Venetian blind are turned to admit more light, and having descended to the customary point, it readjusts its feathers and rises again obliquely without sound. They will continue for hours together amusing themselves in this manner upon a mild day, and when they are in this mood the sportsman has very little chance of getting near them."—*Herbert, in Bennett's ed.*]

[12] [*Brit. Zool.*, vol. ii., p.] 360. [13] 409.

[14] [*Mergulus alle*, L., not uncommonly driven southward and inland in stormy winters from its northern haunts.]

from *Alresford*, where there is a great lake: it was kept awhile, but died.

I saw young teals[1] taken alive in the ponds of *Wolmer-forest* in the beginning of *July* last, along with flappers, or young wild ducks.

Speaking of the *swift*,[2] that page says "*it's drink the dew*"; whereas it should be "it drinks on the wing"; for all the swallow kind sip their water as they sweep over the face of pools or rivers: like *Virgil*'s bees, they drink flying, "*flumina summa libant*".[3] In this method of drinking perhaps this genus may be peculiar.

Of the sedge-bird[4] be pleased to say it sings most part of the night; it's notes are hurrying, but not unpleasing, and imitative of several birds; as the sparrow, swallow, sky-lark. When it happens to be silent in the night, by throwing a stone or clod into the bushes where it sits you immediately set it a singing; or in other words, though it slumbers sometimes, yet as soon as it is awakened it reassumes it's song.

LETTER XL.

TO THE SAME.

Selborne, Sept. 2, 1774.

DEAR SIR,

BEFORE your letter arrived, and of my own accord, I had been remarking and comparing the tails of the male and female swallow, and this ere any young broods appeared; so that there was no danger of confounding the dams with their *pulli*: and besides, as they were then always in pairs, and busied in the employ of nidification, there could be no room for mistaking the sexes, nor the individuals of different chimnies the one for the other. From all my observations, it constantly appeared that each sex has the long feathers in it's tail that give it that forked shape; with this difference, that they are longer in the tail of the male than in that of the female.

Nightingales, when their young first come abroad, and are helpless, make a plaintive and a jarring noise; and also a snapping or cracking, pursuing people along the hedges as they walk: these last sounds seem intended for menace and defiance.

[1] [*Brit. Zool.*, vol. ii., p.] 475. [2] 15.
[3] [*Georg.*, IV., 54.] [4] [*Brit. Zool.*, vol. ii., p.] 16.

The grasshopper-lark chirps all night in the height of summer.[1]

Swans turn white the second year, and breed the third.

Weasels prey on moles, as appears by their being sometimes caught in mole-traps.

Sparrow-hawks sometimes breed in old crows' nests, and the kestril in churches and ruins.

There are supposed to be two sorts of eels in the island of *Ely*. The threads sometimes discovered in eels are perhaps their young: the generation of eels is very dark and mysterious.[2]

Hen-harriers breed on the ground, and seem never to settle on trees.

When redstarts shake their tails they move them horizontally, as dogs do when they fawn: the tail of a wagtail, when in motion, bobs up and down like that of a jaded horse.[3]

Hedge-sparrows have a remarkable flirt with their wings in breeding-time; as soon as frosty mornings come they make a very piping plaintive noise.

Many birds which become silent about *Midsummer* reassume their notes again in *September;* as the thrush, blackbird,[4] wood-

[1] ["Chirp" is an inappropriate word for the reel of the grasshopper-warbler. White was probably at a loss for a verb to express the peculiar stridulation which he had well described in Letter XVI. to Pennant.]

[2] [The most important new light upon the generation of eels is that furnished by the observations of Grassi and Calandruccio (*Atti della Reale Accademia dei Lincei*, vol. vi., 1897). It was long ago ascertained that the eel descends to the sea in autumn or early winter, and that it never spawns, nor even becomes mature in fresh waters. The eels which descend to the sea never return, but young eels or elvers come up from the sea in spring, millions at a time. The elvers have been seen to travel along the bank of a river in a continuous band or eel-rope, which has been known to glide upwards for fifteen days together. We now know something of that part of the history which is transacted in the sea. When it leaves the river the eel makes its way to very deep water, and there undergoes a change. The eyes dilate; the pectoral fin and the border of the gill-cover turn black; the reproductive organs enlarge. The eels lay their eggs in water of not less than 250 fathoms' depth, the young which are hatched out being tape-like, transparent, colourless, devoid of red blood, and armed with peculiar teeth. Such fishes had been captured from time to time, and described as a peculiar kind of deep-water fish, to which the name of *Leptocephalus* was given. After a time the *Leptocephalus* ceases to feed, loses bulk, and develops pigment on the surface of the body. The larval teeth are cast, and the larval skeleton is replaced by a new one. Then the fish comes to the surface, enters the mouth of a river, and if caught is immediately recognised as an elver. It is now a year old, and about two inches long.]

[3] [The "flicker" of the redstart's tail has been a curious puzzle to ornithologists. Macgillivray, most careful of observers, affirmed that it was a vertical, not a horizontal movement, and Seebohm follows him. Mr. Harting and others agree with White. The fact is that the motion is so quick that it is almost impossible to be quite sure of the way in which it is done.]

[4] [This is probably a slip, and the missel-thrush may have been meant; the blackbird rarely, if ever, sings after the moult. The question of the cause of autumn song, which White here raises, has never yet been scientifically explained.]

lark, willow-wren, &c.; hence *August* is by much the most mute month, the spring, summer and autumn through. Are birds induced to sing again because the temperament of autumn resembles that of spring?

Linnæus ranges plants geographically; palms inhabit the tropics, grasses the temperate zones, and mosses and lichens the polar circles; no doubt animals may be classed in the same manner with propriety.

House-sparrows build under eaves in the spring; as the weather becomes hotter they get out for coolness, and nest in plum-trees and apple-trees. These birds have been known sometimes to build in rooks' nests, and sometimes in the forks of boughs under rooks' nests.

As my neighbour was housing a rick he observed that his dogs devoured all the little red mice that they could catch, but rejected the common mice; and that his cats ate the common mice, refusing the red.

Red-breasts sing all through the spring, summer, and autumn. The reason that they are called autumn songsters is, because in the two first seasons their voices are drowned and lost in the general chorus; in the latter their song becomes distinguishable. Many songsters of the autumn seem to be the young cock red-breasts of that year: notwithstanding the prejudices in their favour, they do much mischief in gardens to the summer-fruits.[1]

The titmouse, which early in *February* begins to make two quaint notes, like the whetting of a saw, is the marsh titmouse: the great titmouse sings with three cheerful joyous notes, and begins about the same time.

Wrens sing all the winter through, frost excepted.[2]

House-martins came remarkably late this year both in *Hampshire* and *Devonshire:* is this circumstance for or against either hiding or migration?

Most birds drink sipping at intervals; but pigeons take a long continued draught, like quadrupeds.

Notwithstanding what I have said in a former letter, no grey crows were ever known to breed on *Dartmoor;* it was my mistake.

The appearance and flying of the *scarabæus solstitialis,* or fern-chafer, commence with the month of *July,* and cease about the

[1] They eat also the berries of the ivy, the honey-suckle, and the *euonymus europæus,* or spindle-tree.

[2] [Wrens will often sing in severe frost, which does not silence the winter singers, unless prolonged and sunless.]

end of it. These scarabs are the constant food of *caprimulgi*, or fern-owls, through that period. They abound on the chalky downs and in some sandy districts, but not in the clays.

In the garden of the *Black-bear* inn in the town of *Reading* is a stream or canal running under the stables and out into the fields on the other side of the road: in this water are many carps, which lie rolling about in sight, being fed by travellers, who amuse themselves by tossing them bread: but as soon as the weather grows at all severe these fishes are no longer seen, because they retire under the stables, where they remain till the return of spring. Do they lie in a torpid state? if they do not, how are they supported?

The note of the white-throat, which is continually repeated, and often attended with odd gesticulations on the wing, is harsh and displeasing.[1] These birds seem of a pugnacious disposition; for they sing with an erected crest and attitudes of rivalry and defiance; are shy and wild in breeding-time, avoiding neighbourhoods, and haunting lonely lanes and commons; nay even the very tops of the *Sussex-downs*, where there are bushes and covert; but in *July* and *August* they bring their broods into gardens and orchards, and make great havock among the summer-fruits.

The black-cap has in common a full, sweet, deep, loud, and wild pipe; yet that strain is of short continuance, and his motions are desultory; but when that bird sits calmly and engages in song in earnest, he pours forth very sweet, but inward melody, and expresses great variety of soft and gentle modulations, superior perhaps to those of any of our warblers, the nightingale excepted.

Black-caps mostly haunt orchards and gardens; while they warble their throats are wonderfully distended.

The song of the redstart is superior, though somewhat like that of the white-throat: some birds have a few more notes

[1] [White's impressions of the songs of birds are always interesting, and in this and the three following paragraphs we have good evidence of his care in noting them; but it is singular that he should have found the vivacious song of the whitethroat displeasing, in spite of its lack of sweetness. Objection has been made to this account of the whitethroat on the ground that it is not a "shy and wild bird in breeding time"; and Mr. Harting has even suggested that White confused it with the lesser whitethroat. But it would be equally untrue to describe the latter as wild or shy where it is common, for it frequently breeds in gardens; and its song and attitude when singing are inconsistent with White's description. White is only at fault in slightly exaggerating the fact that the greater whitethroat is, in the breeding season, a bird of the fields and hedgerows.]

than others. Sitting very placidly on the top of a tall tree in a village, the cock sings from morning to night: he affects neighbourhoods, and avoids solitude, and loves to build in orchards and about houses; with us he perches on the vane of a tall maypole.

The fly-catcher is of all our summer birds the most mute and the most familiar; it also appears the last of any. It builds in a vine, or a sweetbriar, against the wall of an house, or in the hole of a wall, or on the end of a beam or plate, and often close to the post of a door where people are going in and out all day long. This bird does not make the least pretension to song, but uses a little inward wailing note when it thinks it's young in danger from cats or other annoyances: it breeds but once, and retires early.[1]

Selborne parish alone can and has exhibited at times more than half the birds that are ever seen in all *Sweden;* the former has produced more than one hundred and twenty species, the latter only two hundred and twenty-one. Let me add also that it has shown near half the species that were ever known in *Great-Britain.*[2]

On a retrospect, I observe that my long letter carries with it a quaint and magisterial air, and is very sententious; but, when I recollect that you requested stricture and anecdote, I hope you will pardon the didactic manner for the sake of the information it may happen to contain.

LETTER XLI.

TO THE SAME.

It is matter of curious inquiry to trace out how those species of soft-billed birds, that continue with us the winter through, subsist during the dead months. The imbecility of birds seems not to be the only reason why they shun the rigour of our winters; for the robust *wry-neck* (so much resembling the hardy race of *wood-peckers*) migrates, while the feeble little *golden-crowned*

[1] ["The song is very faint and low" (H. Saunders, *Manual of British Birds*, p. 150). It must be remembered that White's hearing was defective; the writer of this note, who suffers in the same way, has never heard the song of the flycatcher.]

[2] *Sweden*, 221, *Great-Britain*, 252 species.

[The list of British birds now includes about 370, of which about 110 are rare and accidental visitors.]

wren, that shadow of a bird, braves our severest frosts without availing himself of houses or villages, to which most of our winter birds crowd in distressful seasons, while this keeps aloof in fields and woods; but perhaps this may be the reason why they may often perish, and why they are almost as rare as any bird we know.[1]

I have no reason to doubt but that the soft-billed birds, which winter with us, subsist chiefly on insects in their *aurelia* state.[2] All the species of *wagtails* in severe weather haunt shallow streams near their spring-heads, where they never freeze; and, by wading, pick out the aurelias of the genus of[3] *Phryganeæ*, &c.

Hedge-sparrows frequent sinks and gutters in hard weather, where they pick up crumbs and other sweepings: and in mild weather they procure worms, which are stirring every month in the year, as any one may see that will only be at the trouble of taking a candle to a grass-plot on any mild winter's night. Red-breasts and wrens in the winter haunt out-houses, stables, and barns, where they find spiders and flies that have laid themselves up during the cold season. But the grand support of the soft-billed birds in winter is that infinite profusion of *aureliæ* of the *lepidoptera ordo*, which is fastened to the twigs of trees and their trunks; to the pales and walls of gardens and buildings; and is found in every cranny and cleft of rock or rubbish, and even in the ground itself.

Every species of titmouse winters with us; they have what I call a kind of intermediate bill between the hard and the soft, between the *Linnæan* genera of *fringilla* and *motacilla*. One species alone spends it's whole time in the woods and fields, never retreating for succour in the severest seasons to houses and neighbourhoods; and that is the delicate long-tailed titmouse, which is almost as minute as the golden-crowned wren: but the blue titmouse, or nun (*parus cæruleus*), the cole-mouse (*parus ater*), the great black-headed titmouse (*fringillago*), and the marsh titmouse (*parus palustris*), all resort, at times, to buildings; and in hard weather particularly. The great titmouse, driven by stress of weather, much frequents houses; and, in deep snows, I have seen this bird, while it hung with it's back downwards (to

[1] [It is now a well-known fact that this minute bird, though resident in small numbers, migrates to our eastern shores in vast numbers every autumn.]

[2] [The truth of this conjecture, which is amplified in the next paragraph, has recently been remarkably confirmed by experiments made by Prof. Poulton. See *Report of British Association for* 1898.]

[3] See *Derham*'s Physico-theology, p. 235.

my no small delight and admiration), draw straws lengthwise from out the eaves of thatched houses, in order to pull out the flies that were concealed between them, and that in such numbers that they quite defaced the thatch, and gave it a ragged appearance.

The blue *titmouse*, or *nun*, is a great frequenter of houses, and a general devourer. Besides insects, it is very fond of flesh; for it frequently picks bones on dunghills: it is a vast admirer of suet, and haunts butchers' shops. When a boy, I have known twenty in a morning caught with snap mouse-traps, baited with tallow or suet. It will also pick holes in apples left on the ground, and be well entertained with the seeds on the head of a sun-flower. The blue, marsh, and great titmice will, in very severe weather, carry away barley and oat straws from the sides of ricks.

How the *wheat-ear* and *whin-chat* support themselves in winter cannot be so easily ascertained,[1] since they spend their time on wild heaths and warrens; the former especially, where there are stone quarries: most probably it is that their maintenance arises from the *aureliæ* of the *lepidoptera ordo*, which furnish them with a plentiful table in the wilderness.

I am, &c.

LETTER XLII.

TO THE SAME.

Selborne, March 9, 1775.

Dear Sir,

Some future *faunist*, a man of fortune, will, I hope, extend his visits to the kingdom of *Ireland;* a new field, and a country little known to the naturalist. He will not, it is to be wished, undertake that tour unaccompanied by a botanist, because the mountains have scarcely been sufficiently examined; and the southerly counties of so mild an island may possibly afford some plants little to be expected within the *British* dominions. A person of a thinking turn of mind will draw many just remarks from the modern improvements of that country, both in arts and agriculture, where premiums obtained long before they were heard of with us. The manners of the wild natives, their

[1] [Both the wheatear and the whinchat migrate regularly.]

superstitions, their prejudices, their sordid way of life, will extort from him many useful reflections. He should also take with him an able draughtsman; for he must by no means pass over the noble castles and seats, the extensive and picturesque lakes and waterfalls, and the lofty stupendous mountains, so little known, and so engaging to the imagination when described and exhibited in a lively manner: such a work would be well received.

As I have seen no modern map of *Scotland*, I cannot pretend to say how accurate or particular any such may be; but this I know, that the best old maps of that kingdom are very defective.

The great obvious defect that I have remarked in all maps of *Scotland* that have fallen in my way is, a want of a *coloured line*, or *stroke*, that shall exactly define the just limits of that district called *The Highlands*. Moreover, all the great avenues to that mountainous and romantic country want to be well distinguished. The military roads formed by general *Wade* are so great and Roman-like an undertaking that they well merit attention. My old map, *Moll*'s Map, takes notice of *Fort William;* but could not mention the other forts that have been erected long since: therefore a good representation of the chain of forts should not be omitted.

The celebrated zigzag up the *Coryarich* must not be passed over. *Moll* takes notice of *Hamilton* and *Drumlanrig*, and such capital houses; but a new survey, no doubt, should represent every seat and castle remarkable for any great event, or celebrated for it's paintings, &c. Lord *Breadalbane's* seat and beautiful *policy* are too curious and extraordinary to be omitted.

The seat of the Earl of *Eglintoun*, near *Glasgow*, is worthy of notice. The pine-plantations of that nobleman are very grand and extensive indeed.

I am, &c.

LETTER XLIII.

TO THE SAME.

A PAIR of *honey-buzzards, buteo apivorus,*[1] *sive vespivorus Raii*, built them a large shallow nest, composed of twigs and lined with

[1] [*Pernis apivorus*, L. This interesting and quite harmless migrant, which formerly bred in some numbers in Hampshire, is now believed to have been driven away, chiefly by the ravages of collectors.]

dead beechen leaves, upon a tall slender beech near the middle of *Selborne-hanger*, in the summer of 1780. In the middle of the month of *June* a bold boy climbed this tree, though standing on so steep and dizzy a situation, and brought down an egg, the only one in the nest, which had been sat on for some time, and contained the embrio of a young bird. The egg was smaller, and not so round as those of the common buzzard; was dotted at each end with small red spots, and surrounded in the middle with a broad bloody zone.

The hen-bird was shot, and answered exactly to Mr. *Ray's* description of that species; had a black *cere*, short thick legs, and a long tail. When on the wing this species may be easily distinguished from the *common buzzard* by it's hawk-like appearance, small head, wings not so blunt, and longer tail. This specimen contained in it's craw some limbs of frogs and many grey snails without shells. The *irides* of the eyes of this bird were of a beautiful bright yellow colour.

About the tenth of *July* in the same summer a pair of *sparrow-hawks* bred in an old crow's nest on a low beech in the same hanger; and as their brood, which was numerous, began to grow up, became so daring and ravenous, that they were a terror to all the dames in the village that had chickens or ducklings under their care. A boy climbed the tree, and found the young so fledged that they all escaped from him; but discovered that a good house had been kept: the larder was well-stored with provisions; for he brought down a young blackbird, jay, and house-martin, all clean picked, and some half devoured. The old birds had been observed to make sad havock for some days among the new-flown swallows and martins, which, being but lately out of their nests, had not acquired those powers and command of wing that enable them, when more mature, to set such enemies at defiance.

LETTER XLIV.

TO THE SAME.

Selborne, Nov. 30, 1780.

DEAR SIR,

EVERY incident that occasions a renewal of our correspondence will ever be pleasing and agreeable to me.

As to the wild *wood-pigeon*, the *oenas*, or *vinago*, of *Ray*,[1] I am much of your mind; and see no reason for making it the origin of the common *house-dove:* but suppose those that have advanced that opinion may have been misled by another appellation, often given to the *oenas*, which is that of *stock-dove*.

Unless the stock-dove in the winter varies greatly in manners from itself in summer, no species seems more unlikely to be domesticated, and to make an *house-dove*. We very rarely see the latter settle on trees at all, nor does it ever haunt the woods; but the former, as long as it stays with us, from *November* perhaps to *February*, lives the same wild life with the *ring-dove, palumbus torquatus;* frequents coppices and groves, supports itself chiefly by mast, and delights to roost in the tallest beeches. Could it be known in what manner stock-doves build, the doubt would be settled with me at once, provided they construct their nests on trees, like the *ring-dove*, as I much suspect they do.

You received, you say, last spring a *stock-dove* from *Sussex;* and are informed that they sometimes breed in that country. But why did not your correspondent determine the place of it's nidification, whether on rocks, cliffs, or trees? If he was not an adroit ornithologist I should doubt the fact, because people with us perpetually confound the *stock-dove* with the *ring-dove*.

For my own part, I readily concur with you in supposing that house-doves are derived from the *small blue rock-pigeon*, for many reasons.[2] In the first place the wild stock-dove is manifestly larger than the common house-dove, against the usual rule of domestication, which generally enlarges the breed. Again, those two remarkable *black spots* on the remiges of each wing of the stock-dove, which are so characteristic of the species, would not, one should think, be totally lost by it's being reclaimed; but would often break out among its descendants. But what is worth an hundred arguments is, the instance you give in Sir *Roger Mostyn*'s house-doves in *Caernarvonshire;* which, though

[1] [*Columba œnas*, L. White evidently regarded this species as the most abundant which frequented Selborne, but only as a winter "internal" migrant. Borrer (*Birds of Sussex*, p. 178) says that it assembles in large flocks in the winter. It breeds in great numbers in trees, cliffs, and even in rabbit-burrows (as, *e.g.*, at Lulworth) along the south coast, and packs in autumn, with the ring-dove, to feed in woods and fields. See Letter XXXIX. to Pennant.]

[2] [In this passage White foreshadowed both the argument and the conclusion of Darwin (see *Animals and Plants under Domestication*, vol. i., chap. vi.). There is now no doubt that the domestic pigeon is descended from the small rock-dove (*Columba livia*, L.), or that the name stock-dove is derived from *stock* = *tree*, and not *stock* = *race*. White's observation and perspicuity are nowhere better illustrated than in this letter.]

tempted by plenty of food and gentle treatment, can never be prevailed on to inhabit their cote for any time; but, as soon as they begin to breed, betake themselves to the fastnesses of *Ormshead*, and deposit their young in safety amidst the inaccessible caverns and precipices of that stupendous promontory.

"Naturam expellas furcâ . . . tamen usque recurret."[1]

I have consulted a sportsman, now in his seventy-eighth year, who tells me that fifty or sixty years back, when the beechen woods were much more extensive than at present, the number of wood-pigeons was astonishing; that he has often killed near twenty in a day; and that with a long wild-fowl piece he has shot seven or eight at a time on the wing as they came wheeling over his head: he moreover adds, which I was not aware of, that often there were among them little parties of small *blue doves*, which he calls *rockiers*.[2] The food of these numberless emigrants was beech-mast and some acorns; and particularly barley, which they collected in the stubbles. But of late years, since the vast increase of turnips, that vegetable has furnished a great part of their support in hard weather; and the holes they pick in these roots greatly damage the crop. From this food their flesh has contracted a rancidness which occasions them to be rejected by nicer judges of eating, who thought them before a delicate dish. They were shot not only as they were feeding in the fields, and especially in snowy weather, but also at the close of the evening, by men who lay in ambush among the woods and groves to kill them as they came in to roost.[3] These are the principal circumstances relating to this wonderful *internal* migration, which with us takes place towards the end of *November*, and ceases early in the spring. Last winter we had in *Selborne* high wood about an hundred of these doves; but in former times the flocks were so vast, not only with us but all the district round, that on mornings and evenings they traversed the air, like rooks, in strings, reaching for a mile together. When they thus rendezvoused here by thousands, if they happened to be suddenly roused from their roost-trees on an evening,

"Their rising all at once was like the sound
"Of thunder heard remote."——[4]

[1] [Hor., *Ep.*, I., 10, 24.]
[2] [The name suggests rock-pigeons, but they were no doubt stock-doves.]
[3] Some old sportsmen say that the main part of these flocks used to withdraw as soon as the heavy *Christmas* frosts were over.
[4] [*Paradise Lost*, II., 476-7.]

It will by no means be foreign to the present purpose to add, that I had a relation in this neighbourhood who made it a practice, for a time, whenever he could procure the eggs of a *ring-dove*, to place them under a pair of doves that were sitting in his own pigeon-house; hoping thereby, if he could bring about a coalition, to enlarge his breed, and teach his own doves to beat out into the woods and to support themselves by mast: the plan was plausible, but something always interrupted the success; for though the birds were usually hatched, and sometimes grew to half their size, yet none ever arrived at maturity. I myself have seen these foundlings in their nest displaying a strange ferocity of nature, so as scarcely to bear to be looked at, and snapping with their bills by way of menace. In short, they always died, perhaps for want of proper sustenance: but the owner thought that by their fierce and wild demeanour they frighted their foster-mothers, and so were starved.

Virgil, as a familiar occurrence, by way of simile, describes a dove haunting the cavern of a rock in such engaging numbers, that I cannot refrain from quoting the passage: and *John Dryden* has rendered it so happily in our language, that without farther excuse I shall add his translation also.

"Qualis speluncâ subitò commota Columba,
"Cui domus, et dulces latebroso in pumice nidi,
"Fertur in arva volans, plausumque exterrita pennis
"Dat tecto ingentem—mox aere lapsa quieto,
"Radit iter liquidum, celeres neque commovet alas."[1]

"As when a dove her rocky hold forsakes,
"Rous'd, in a fright her sounding wings she shakes;
"The cavern rings with clattering:—out she flies,
"And leaves her callow care, and cleaves the skies:
"At first she flutters:—but at length she springs
"To smoother flight, and shoots upon her wings."

I am, &c.

LETTER I.

TO THE HONOURABLE DAINES BARRINGTON.

Selborne, June 30, 1769.

DEAR SIR,

WHEN I was in town last month I partly engaged that I would sometime do myself the honour to write to you on the subject of

[1] [*Æn.*, V., 213-7.]

natural history: and I am the more ready to fulfil my promise, because I see you are a gentleman of great candour, and one that will make allowances; especially where the writer professes to be an *out-door naturalist*, one that takes his observations from the subject itself, and not from the writings of others.

The following is a List *of the* Summer Birds *of* Passage *which I have discovered in this neighbourhood, ranged somewhat in the order in which they appear:*

	RAII NOMINA.	USUALLY APPEARS ABOUT
1. Wryneck,	*Jynx, sive torquilla:*	The middle of *March:* harsh note.
2. Smallest willow-wren,[1]	*Regulus non cristatus:*	*March* 23: chirps till *September.*
3. Swallow,	*Hirundo domestica:*	*April* 13.
4. Martin,	*Hirundo rustica:*	Ditto.
5. Sand-martin,	*Hirundo riparia:*	Ditto.
6. Black-cap,	*Atricapilla:*	Ditto: a sweet wild note.
7. Nightingale,	*Luscinia:*	Beginning of *April.*
8. Cuckoo,	*Cuculus:*	Middle of *April.*
9. Middle willow-wren,[2]	*Regulus non cristatus:*	Ditto: a sweet plaintive note.
10. White-throat,	*Ficedulæ affinis:*[3]	Ditto: mean note; sings on till *September.*
11. Red-start,	*Ruticilla:*[4]	Ditto: more agreeable song.
12. Stone-curlew,	*Oedicnemus:*	End of *March:* loud nocturnal whistle.
13. Turtle-dove,	*Turtur:*	
14. Grasshopper-lark,[5]	*Alauda minima locustæ voce:*	Middle of *April:* a small sibilous note, till the end of *July.*
15. Swift,	*Hirundo apus:*	About *April* 27.
16. Less reed-sparrow,[6]	*Passer arundinaceus minor:*	A sweet polyglot, but hurrying: it has the notes of many birds.
17. Land-rail,[7]	*Ortygometra:*	A loud harsh note, crex, crex.
18. Largest willow-wren,[8]	*Regulus non cristatus:*	Cantat voce stridulâ locustæ; end of *April*, on the tops of high beeches.
19. Goat-sucker, or fern-owl,	*Caprimulgus:*	Beginning of *May:* chatters by night with a singular noise.
20. Fly-catcher,[9]	*Stoparola:*	*May* 12. A very mute bird: this is the latest summer bird of passage.

This assemblage of curious and amusing birds belongs to ten several genera of the *Linnæan* system; and are all of the *ordo* of

[1] [The chiffchaff (*Phylloscopus rufus*, Bechst.).]
[2] [The willow-wren (*P. trochilus*, L.).]
[3] [*Sylvia rufa*, Bodd.]
[4] [*R. phoenicurus*, L.]
[5] [The grasshopper-warbler (*Locustella nævia*, Bodd.).]
[6] [The sedge-warbler (*Acrocephalus phragmitis*, Bechst.).]
[7] [*Crex pratensis*, Bechst.]
[8] [The wood-wren (*Phylloscopus sibilatrix*, Bechst.).]
[9] [*Muscicapa grisola*, L.]

passeres save the *jynx* and *cuculus*, which are *picæ*, and the *charadrius* (*oedicnemus*) and *rallus* (*ortygometra*), which are *grallæ*.

These birds, as they stand numerically, belong to the following *Linnæan* genera:

1.	*Jynx:*	13. *Columba:*
2, 6, 7, 9, 10, 11, 16, 18.	*Motacilla:*	17. *Rallus:*
3, 4, 5, 15.	*Hirundo:*	19. *Caprimulgus:*
8.	*Cuculus:*	14. *Alauda:*
12.	*Charadrius:*	20. *Muscicapa.*

Most soft-billed birds live on insects, and not on grain and seeds; and therefore at the end of summer they retire: but the following soft-billed birds, though insect-eaters, stay with us the year round:

	RAII NOMINA.	
Redbreast,	*Rubecula:*	These frequent houses; and haunt outbuildings in the winter: eat spiders.
Wren,	*Passer troglodytes:*	
Hedge-sparrow,	*Curruca:*	Haunt sinks for crumbs and other sweepings.
White-wagtail,[1]	*Motacilla alba:*	These frequent shallow rivulets near the spring heads, where they never freeze: eat the aureliæ of Phryganea. The smallest birds that walk.
Yellow-wagtail,	*Motacilla flava:*	
Grey-wagtail,	*Motacilla cinerea:*	
Wheat-ear,[2]	*Oenanthe:*	Some of these are to be seen with us the winter through.
Whin-chat,	*Oenanthe secunda:*	
Stone-chatter,[3]	*Oenanthe tertia:*	
Golden-crowned wren,	*Regulus cristatus:*	This is the smallest British bird: haunts the tops of tall trees; stays the winter through.

A List *of the* Winter Birds *of* Passage *round this neighbourhood, ranged somewhat in the order in which they appear:*

1. Ring-ousel,[4]	*Merula torquata:*	This is a new migration which I have lately discovered about *Michaelmas* week, and again about the fourteenth of *March.*

[1] [By the white wagtail White means our common pied wagtail (*M. lugubris*, Temm.), which was not then distinguished from our white wagtail (*M. alba*, L.). What species are to be understood by the other two names which White gives we cannot be sure; by the yellow wagtail he *probably* means our grey wagtail (*M. melanope*, Pall.); see note on Letter XLIII. to Pennant. By grey wagtail it is not impossible that he meant the young of the pied wagtail, mistaking them for a different species. Our white wagtail is an uncommon summer visitant, our grey wagtail a resident, our yellow wagtail (*M. raii*, Bonap.) a summer visitant.]

[2] [The wheatear is a summer visitant.]

[3] [Most of our stone-chats migrate before winter.]

[4] [A summer visitant.]

RAII NOMINA.

2. Redwing,	*Turdus iliacus :*	About old *Michaelmas.*
3. Fieldfare,	*Turdus pilaris :*	Though a percher by day, roosts on the ground.
4. Royston-crow,	*Cornix cinerea :*	Most frequent on downs.
5. Woodcock,[1]	*Scolopax :*	Appears about old *Michaelmas.*
6. Snipe,[2]	*Gallinago minor :*	Some snipes constantly breed with us.
7. Jack-snipe,	*Gallinago minima :*	
8. Wood-pigeon,[3]	*Oenas :*	Seldom appears till late : not in such plenty as formerly.
9. Wild-swan,	*Cygnus ferus :*	On some large waters.
10. Wild-goose,	*Anser ferus :*	
11. Wild-duck,[4]	*Anas torquata minor :*	On our lakes and streams.
12. Pochard,[5]	*Anas fera fusca :*	
13. Wigeon,	*Penelope :*	
14. Teal, breeds with us in *Wolmer-forest,*	*Querquedula :*	
15. Gross-beak,	*Coccothraustes :*	These are only wanderers that appear occasionally, and are not observant of any regular migration.
16. Cross-bill,[6]	*Loxia :*	
17. Silk-tail,[7]	*Garrulus bohemicus :*	

These birds, as they stand numerically, belong to the following *Linnæan* genera :

1, 2, 3,	*Turdus :*	9, 10, 11, 12, 13, 14,	*Anas :*
4,	*Corvus :*	15, 16,	*Loxia :*
5, 6, 7,	*Scolopax :*	17.	*Ampelis.*
8,	*Columba :*		

Birds that sing in the night are but few.

Nightingale,	*Luscinia :*	"In shadiest covert hid." MILTON.
Woodlark,	*Alauda arborea :*	Suspended in mid air.
Less reed-sparrow,[8]	*Passer arundinaceus minor :*	Among reeds and willows.

I should now proceed to such birds as continue to sing after *Midsummer,* but, as they are rather numerous, they would exceed the bounds of this paper : besides, as this is now the season for remarking on that subject, I am willing to repeat my observations

[1] [The woodcock is a resident as well as a winter visitant.]
[2] [The common snipe is a resident as well as a winter visitant.]
[3] [Both the wood-pigeon and the stock-dove are residents.]
[4] [The mallard (*Anas boscas,* L.) is a resident as well as a winter visitant.]
[5] [The pochard (*Fuligula ferina,* L.) is a resident as well as a winter visitant.]
[6] [The common crossbill (*Loxia curvirostra,* L.) is an irregular visitant, chiefly in autumn and winter. White has "cross-beak (*Coccothraustes*)" and "gross-bill (*Loxia*)".]
[7] The waxwing (*Ampelis garrulus,* L.) is an occasional winter visitant.]
[8] [The sedge-warbler (*Acrocephalus phragmitis,* Bechst.).]

on some birds concerning the continuation of whose song I seem at present to have some doubt.

I am, &c.

LETTER II.

TO THE SAME.

Selborne, Nov. 2, 1769.

DEAR SIR,

WHEN I did myself the honour to write to you about the end of last *June* on the subject of natural history, I sent you a list of the summer-birds of passage which I have observed in this neighbourhood; and also a list of the winter-birds of passage: I mentioned besides those soft-billed birds that stay with us the winter through in the south of *England*, and those that are remarkable for singing in the night.

According to my proposal, I shall now proceed to such birds (singing birds strictly so called) as continue in full song till after *Midsummer*; and shall range them somewhat in the order in which they first begin to open as the spring advances.[1]

	RAII NOMINA.	
1. Wood-lark,	*Alauda arborea:*	In *January*, and continues to sing through all the summer and autumn.
2. Song-thrush,	*Turdus simpliciter dictus:*	In *February* and on to *August*, reassume their song in autumn.
3. Wren,	*Passer troglodytes:*	All the year, hard frost excepted.
4. Redbreast,	*Rubecula:*	Ditto.
5. Hedge-sparrow,	*Curruca:*	Early in *February* to *July* the 10th.
6. Yellowhammer,	*Emberiza flava:*	Early in *February*, and on through *July* to *August* the 21st.
7. Skylark,	*Alauda vulgaris:*	In *February*, and on to *October*.
8. Swallow,	*Hirundo domestica:*	From *April* to *September*.
9. Black-cap,	*Atricapilla:*	Beginning of *April* to *July* 13th.
10. Titlark,[2]	*Alauda pratorum:*	From middle of *April* to *July* the 16th.

[1] [The list that follows seems to be the result of only one year's observation, as we may gather from the first paragraph of the next letter. The same method carried over a series of years would no doubt have modified some of the results here given as to dates, etc.]

[2] [The meadow pipit (*Anthus pratensis*, L.). White does not distinguish between this and the tree pipit (*Anthus trivialis*, L.).]

	RAII NOMINA.	
11. Blackbird,	*Merula vulgaris :*	Sometimes in *February* and *March*, and so on to *July* the twenty-third ; reassumes in autumn.
12. White-throat,	*Ficedulæ affinis :*	In *April* and on to *July* 23.
13. Goldfinch,	*Carduelis :*	April and through to *September* 16.
14. Greenfinch,	*Chloris :*	On to *July* and *August* 2.
15. Less reed-sparrow,[1]	*Passer arundinaceus minor :*	*May*, on to beginning of *July*.
16. Common linnet,	*Linaria vulgaris :*	Breeds and whistles on till *August ;* reassumes it's note when they begin to congregate in *October*, and again early before the flock separate.

Birds that cease to be in full song, and are usually silent at or before *Midsummer :*

17. Middle willow-wren,[2]	*Regulus non cristatus :*	Middle of *June ;* begins in *April*.
18. Redstart,	*Ruticilla :*	Ditto : begins in *May*.
19. Chaffinch,	*Fringilla :*	Beginning of *June :* sings first in *February*.
20. Nightingale,	*Luscinia :*	Middle of *June :* sings first in *April*.

Birds that sing for a short time, and very early in the spring :

21. Missel-bird,	*Turdus viscivorus :*	*January* the 2d, 1770, in *February*. Is called in *Hampshire* and *Sussex* the storm-cock, because it's song is supposed to forebode windy wet weather : is the largest singing bird we have.
22. Great titmouse, or ox-eye.	*Fringillago :*	In *February*, *March*, *April :* reassumes for a short time in *September*.

Birds that have somewhat of a note or song, and yet are hardly to be called singing birds :

23. Golden-crowned wren,	*Regulus cristatus :*	It's note as minute as it's person ; frequents the tops of high oaks and firs : the smallest *British* bird.
24. Marsh titmouse,	*Parus palustris :*	Haunts great woods : two harsh sharp notes.

[1] [The sedge-warbler.]
[2] [The willow-wren (*Phylloscopus trochilus*, L.).]

	RAII NOMINA.	
25. Small willow-wren,[1]	*Regulus non cristatus :*	Sings in *March* and on to *September.*
26. Largest ditto,[2]	*Ditto :*	*Cantat voce stridulâ locustæ ;* from end of *April* to *August.*
27. Grasshopper-lark,	*Alauda minima voce locustæ :*	Chirps all night, from the middle of *April* to the end of *July.*
28. Martin,	*Hirundo agrestis :*	All the breeding time ; from *May* to *September.*
29. Bullfinch,	*Pyrrhula :*	
30. Bunting,	*Emberiza alba :*	From the end of *January* to *July.*

All singing birds, and those that have any pretensions to song, not only in *Britain*, but perhaps the world through, come under the *Linnæan ordo* of *passeres.*

The above-mentioned birds, as they stand numerically, belong to the following *Linnæan* genera.

1, 7, 10, 27.	*Alauda :*	8, 28.	*Hirundo.*
2, 11, 21.	*Turdus :*	13, 16, 19.	*Fringilla.*
3, 4, 5, 9, 12, 15, 17, 18, 20, 23, 25, 26.	*Motacilla :*	22, 24.	*Parus.*
6, 30.	*Emberiza :*	14, 29.	*Loxia.*

Birds that sing as they fly are but few.

Skylark,	*Alauda vulgaris :*	Rising, suspended, and falling.
Titlark,	*Alauda pratorum :*	In it's descent ; also sitting on trees, and walking on the ground.
Woodlark,	*Alauda arborea :*	Suspended ; in hot summer nights all night long.
Blackbird,	*Merula :*	Sometimes from bush to bush.
White-throat,	*Ficedulæ affinis :*	Uses when singing on the wing odd jerks and gesticulations.
Swallow,	*Hirundo domestica :*	In soft sunny weather.
Wren,	*Passer troglodytes :*	Sometimes from bush to bush.

Birds that breed most early in these parts.

Raven,	*Corvus :*	Hatches in *February* and *March.*
Song-thrush,	*Turdus :*	In *March.*
Blackbird,	*Merula :*	In *March.*
Rook,	*Cornix frugilega :*	Builds the beginning of *March.*
Woodlark,	*Alauda arborea :*	Hatches in *April.*
Ring-dove,	*Palumbus torquatus :*	Lays the beginning of April.[3]

[1] [The chiffchaff (*P. rufus*, Bechst.).]

[2] [The wood-wren (*P. sibilatrix*, Bechst.).]

[3] ["To this list might have been added the robin, since it not unfrequently nests in January during mild winters."—*Harting.*]

All birds that continue in full song till after *Midsummer* appear to me to breed more than once.

Most kinds of birds seem to me to be wild and shy somewhat in proportion to their bulk; I mean in this island, where they are much pursued and annoyed: but in *Ascension Island*, and many other desolate places, mariners have found fowls so unacquainted with an human figure, that they would stand still to be taken; as is the case with boobies, &c. As an example of what is advanced, I remark that the *golden-crested wren* (the smallest *British* bird) will stand unconcerned till you come within three or four yards of it, while the *bustard* (*otis*), the largest *British* land fowl, does not care to admit a person within so many furlongs.

I am, &c.

LETTER III.

TO THE SAME.

Selborne, Jan. 15, 1770.

Dear Sir,

It was no small matter of satisfaction to me to find that you were not displeased with my little *methodus* of birds. If there was any merit in the sketch, it must be owing to it's punctuality. For many months I carried a list in my pocket of the birds that were to be remarked, and, as I rode or walked about my business, I noted each day the continuance or omission of each bird's song; so that I am as sure of the certainty of my facts as a man can be of any transaction whatsoever.

I shall now proceed to answer the several queries which you put in your two obliging letters, in the best manner that I am able. Perhaps *Eastwick*, and it's environs, where you heard so very few birds, is not a woodland country, and therefore not stocked with such songsters. If you will cast your eye on my last letter, you will find that many species continued to warble after the beginning of *July*.

The titlark and yellowhammer breed late, the latter very late; and therefore it is no wonder that they protract their song: for I lay it down as a maxim in ornithology, that as long as there is any incubation going on there is music. As to the redbreast and wren, it is well known to the most incurious observer that they whistle the year round, hard frost excepted; especially the latter.

It was not in my power to procure you a black-cap, or a less reed-sparrow, or sedge-bird, alive. As the first is undoubtedly, and the last, as far as I can yet see, a summer bird of passage, they would require more nice and curious management in a cage than I should be able to give them: they are both distinguished songsters. The note of the former has such a wild sweetness that it always brings to my mind those lines in a song in "*As You Like It*".

"And tune his merry note
"Unto the *wild* bird's throat." SHAKESPEARE.

The latter has a surprising variety of notes resembling the song of several other birds; but then it has also an hurrying manner, not at all to it's advantage: it is notwithstanding a delicate polyglot.

It is new to me that titlarks in cages sing in the night; perhaps only caged birds do so. I once knew a tame redbreast in a cage that always sang as long as candles were in the room; but in their wild state no one supposes they sing in the night.

I should be almost ready to doubt the fact, that there are to be seen much fewer birds in *July* than in any former month, notwithstanding so many young are hatched daily. Sure I am that it is far otherwise with respect to the *swallow tribe*, which increases prodigiously as the summer advances: and I saw, at the time mentioned, many hundreds of young wagtails on the banks of the *Cherwell*, which almost covered the meadows. If the matter appears as you say in the other species, may it not be owing to the dams being engaged in incubation, while the young are concealed by the leaves?

Many times have I had the curiosity to open the stomachs of *woodcocks* and *snipes;* but nothing ever occurred that helped to explain to me what their subsistence might be: all that I could ever find was a soft mucus, among which lay many pellucid small gravels.[1]

I am, &c.

[1] [Mr. Harting in his note on this passage refers to some valuable observations on the contents of the stomachs of woodcocks in Thompson's *Birds of Ireland*, vol. ii., p. 239, and adds, by way of explaining the soft mucus to which White refers: "The vegetable matter, of which there is often a considerable quantity, probably remains intact after the gastric juice has acted on the worms and other animal food, and thus appears disproportionate to the other contents". On the other hand, Sedgwick (*Textbook of Zoology*, p. 237) says: "It may be of interest to *gourmets* to know that the trail of a woodcock largely consists of distomic trematodes" (parasitic flat-worms).]

LETTER IV.

TO THE SAME.

Selborne, Feb. 19, 1770.

DEAR SIR,

YOUR observation that "the *cuckoo* does not deposit it's egg "indiscriminately in the nest of the first bird that comes in it's "way, but probably looks out a nurse in some degree congenerous, "with whom to intrust it's young," is perfectly new to me; and struck me so forcibly, that I naturally fell into a train of thought that led me to consider whether the fact was so, and what reason there was for it. When I came to recollect and inquire, I could not find that any cuckoo had ever been seen in these parts, except in the nest of the *wagtail*, the *hedge-sparrow*, the *titlark*, the *white-throat*, and the *redbreast*, all soft-billed insectivorous birds. The excellent Mr. *Willughby* mentions the nest of the *palumbus* (*ring-dove*), and of the *fringilla* (*chaffinch*), birds that subsist on acorns and grains, and such hard food: but then he does not mention them as of his own knowledge; but says afterwards that he saw himself a *wagtail* feeding a cuckoo.[1] It appears hardly possible that a soft-billed bird should subsist on the same food with the hard-billed: for the former have thin membranaceous stomachs suited to their soft food; while the latter, the granivorous tribe, have strong muscular gizzards, which, like mills, grind, by the help of small gravels and pebbles, what is swallowed. This proceeding of the cuckoo, of dropping it's eggs as it were by chance, is such a monstrous outrage on maternal affection, one of the first great dictates of nature; and such a violence on instinct; that, had it only been related of a bird in the *Brazils*, or *Peru*, it would never have merited our belief. But yet, should it farther appear that this simple bird, when divested of that natural στοργὴ that seems to raise the kind in general above themselves, and inspire them with extraordinary degrees of cunning and address, may be still endued with a more enlarged faculty of discerning what species are suitable and con-

[1] [The list of birds in whose nests the cuckoo is now known to deposit her eggs is very large; Mr. Bidwell has brought it up to 120 in the *Bulletin of the British Ornithological Club* for March, 1896. The more usual victims are insect-eating birds, such as those White mentions; but almost all our common seed-eating birds are occasionally duped. These, however, it should be noted, feed their own young largely on caterpillars and other insects.]

generous nursing-mothers for it's disregarded eggs and young, and may deposit them only under *their* care,[1] this would be adding wonder to wonder, and instancing, in a fresh manner, that the methods of Providence are not subjected to any mode or rule, but astonish us in new lights, and in various and changeable appearances.

What was said by a very ancient and sublime writer concerning the defect of natural affection in the ostrich, may be well applied to the bird we are talking of:

"*She is hardened against her young ones, as though they were not "her's:*

"*Because God hath deprived her of wisdom, neither hath he im-"parted to her understanding.*"[2]

Query. Does each female cuckoo lay but one egg in a season, or does she drop several in different nests according as opportunity offers?[3]

I am, &c.

LETTER V.

TO THE SAME.

Selborne, April 12, 1770.

Dear Sir,

I heard many birds of several species sing last year after *Midsummer;* enough to prove that the summer solstice is not the period that puts a stop to the music of the woods. The yellow-hammer no doubt persists with more steadiness than any other; but the woodlark, the wren, the redbreast, the swallow, the white-throat, the goldfinch, the common linnet, are all undoubted instances of the truth of what I advanced.

[1] [It is now regarded as probable that each cuckoo deposits her egg always in a nest of the same species, and that species the one to which that individual cuckoo (and her progenitors) were indebted for nurture; further, that her egg as a rule, though not invariably, more or less resembles those of the victim.]

[2] Job xxxix. 16, 17.

[3] [This question has not yet been certainly answered; but the general result of the evidence seems to be that one cuckoo lays five eggs, or sometimes one or two more, in a season. See A. H. Evans' *Birds* (1898), p. 354.

White does not mention Jenner's paper on the cuckoo in the *Phil. Trans. for* 1788, which appeared after the foregoing letter was written, but before its publication. This celebrated paper contains the most important observations hitherto made on the habits of the cuckoo. The chief results of more recent inquiry will be found in Harting's *Summer Migrants*, and in Newton's *Dictionary of Birds*.]

If this severe season does not interrupt the regularity of the summer migrations, the blackcap will be here in two or three days. I wish it was in my power to procure you one of those songsters; but I am no birdcatcher; and so little used to birds in a cage, that I fear if I had one it would soon die for want of skill in feeding.

Was your reed-sparrow, which you kept in a cage, the thick-billed reed-sparrow of the Zoology, p. 320; or was it the less reed-sparrow of *Ray*, the *sedge-bird* of Mr. *Pennant*'s last publication, p. 16?

As to the matter of long-billed birds growing fatter in moderate frosts, I have no doubt within myself what should be the reason. The thriving at those times appears to me to arise altogether from the gentle check which the cold throws upon insensible perspiration. The case is just the same with blackbirds, &c.; and farmers and warreners observe, the first, that their hogs fat more kindly at such times, and the latter that their rabbits are never in such good case as in a gentle frost. But when frosts are severe, and of long continuance, the case is soon altered; for then a want of food soon overbalances the repletion occasioned by a checked perspiration. I have observed, moreover, that some human constitutions are more inclined to plumpness in winter than in summer.

When birds come to suffer by severe frost, I find that the first that fail and die are the redwing-fieldfares, and then the song-thrushes.

You wonder, with good reason, that the hedge-sparrows, &c., can be induced at all to sit on the egg of the cuckoo without being scandalized at the vast disproportioned size of the suppositious egg;[1] but the brute creation, I suppose, have very little idea of size, colour, or number. For the common hen, I know, when the fury of incubation is on her, will sit on a single shapeless stone instead of a nest full of eggs that have been withdrawn: and, moreover, a hen-turkey, in the same circumstances, would sit on in the empty nest till she perished with hunger.

I think the matter might easily be determined whether a

[1] [It is singular that White should have written as if he were not aware of the very small size of the cuckoo's egg in proportion to that of the bird. In many cases it is not easy at a glance to distinguish the suppositious egg; for which reason it is probable that the blue eggs which the cuckoo is now known sometimes to lay often escape detection in the nests of the hedge-sparrow.]

cuckoo lays one or two eggs, or more, in a season, by opening a female during the laying-time. If more than one was come down out of the ovary, and advanced to a good size, doubtless then she would that spring lay more than one.[1]

I will endeavour to get a hen, and to examine.

Your supposition that there may be some natural obstruction in singing birds while they are mute, and that when this is removed the song recommences, is new and bold: I wish you could discover some good grounds for this suspicion.

I was glad you were pleased with my specimen of the *caprimulgus*, or fern-owl;[2] you were, I find, acquainted with the bird before.

When we meet, I shall be glad to have some conversation with you concerning the proposal you make of my drawing up an account of the animals in this neighbourhood. Your partiality towards my small abilities persuades you, I fear, that I am able to do more than is in my power: for it is no small undertaking for a man unsupported and alone to begin a natural history from his own autopsia! Though there is endless room for observation in the field of nature, which is boundless, yet investigation (where a man endeavours to be sure of his facts) can make but slow progress; and all that one could collect in many years would go into a very narrow compass.

Some extracts from your ingenious "Investigations of the difference between the present temperature of the air in Italy," &c., have fallen in my way; and gave me great satisfaction: they have removed the objections that always arose in my mind whenever I came to the passages which you quote. Surely the judicious *Virgil*, when writing a didactic poem for the region of *Italy*, could never think of describing freezing rivers, unless such severity of weather pretty frequently occurred!

P.S. Swallows appear amidst snows and frost.

[1] [In the cuckoo, as in other birds, only one egg is found in the oviduct at one time. Anatomical examination does not settle the question.]

[2] [The nightjar or goatsucker, also called churn-owl, puckeridge, and wheel-bird.]

LETTER VI.

TO THE SAME.

Selborne, May 21, 1770.

DEAR SIR,

THE severity and turbulence of last month so interrupted the regular process of summer migration, that some of the birds do but just begin to shew themselves, and others are apparently thinner than usual; as the white-throat, the black-cap, the red-start, the fly-catcher. I well remember that after the very severe spring in the year 1739-40 summer birds of passage were very scarce. They come probably hither with a south-east wind, or when it blows between those points;[1] but in that unfavourable year the winds blowed the whole spring and summer through from the opposite quarters. And yet amidst all these disadvantages two swallows, as I mentioned in my last, appeared this year as early as the eleventh of *April* amidst frost and snow; but they withdrew again for a time.

I am not pleased to find that some people seem so little satisfied with *Scopoli*'s new publication;[2] there is room to expect great things from the hands of that man, who is a good naturalist: and one would think that an history of the birds of so distant and southern a region as *Carniola* would be new and interesting. I could wish to see that work, and hope to get it sent down. Dr. *Scopoli* is physician to the wretches that work in the quicksilver mines of that district.

When you talked of keeping a reed-sparrow, and giving it seeds, I could not help wondering; because the reed-sparrow which I mentioned to you (*passer arundinaceus minor Raii*)[3] is a soft-billed bird; and most probably migrates hence before winter; whereas the bird you kept (*passer torquatus Raii*)[4] abides all the year, and is a thick-billed bird. I question whether the latter be much of a songster; but in this matter I want to be better informed. The former has a variety of hurrying notes, and sings all night. Some part of the song of the former, I

[1] [We now know that migrating birds prefer a wind *on the beam* rather than one *astern;* the latter, if strong, would interfere both with their comfort and their steering power.]

[2] This work he calls his *Annus Primus Historico Naturalis.*

[3] [The sedge-warbler.]

[4] [The reed-bunting (*Emberiza schoeniclus*, L.).]

suspect, is attributed to the latter. We have plenty of the soft-billed sort; which Mr. *Pennant* had entirely left out of his *British Zoology*, till I reminded him of his omission. See *British Zoology* last published, p. 16.[1]

I have somewhat to advance on the different manners in which different birds fly and walk; but as this is a subject that I have not enough considered, and is of such a nature as not to be contained in a small space, I shall say nothing further about it at present.[2]

No doubt the reason why the sex of birds in their first plumage is so difficult to be distinguished is, as you say, "because they "are not to pair and discharge their parental functions till the "ensuing spring". As colours seem to be the chief external sexual distinction in many birds, these colours do not take place till sexual attachments begin to obtain.[3] And the case is the same in quadrupeds; among whom, in their younger days, the sexes differ but little: but, as they advance to maturity, horns and shaggy manes, beards and brawny necks, &c. &c. strongly discriminate the male from the female. We may instance still farther in our own species, where a beard and stronger features are usually characteristic of the male sex: but this sexual diversity does not take place in earlier life; for a beautiful youth shall be so like a beautiful girl that the difference shall not be discernible;

"Quem si puellarum insereres choro,
"Mirè sagaces falleret hospites
"Discrimen obscurum, solutis
"Crinibus, ambiguoque vultu." HOR.[4]

[1] See letter xxv. to Mr. *Pennant*.

[2] See letter xlii. to Mr. *Barrington*.

[3] [White seems to have regarded sexual colouration in birds only as a *distinction* of the sexes, without discerning its use either as attractive in the male or protective in the female when sitting. Yet he was aware of the use of the peacock's train in attracting the peahen (see Letter XXXV. to Pennant), and of the protective colouration of the young stone-curlews (Letter XVI. to Pennant). Here, as often elsewhere, he gets upon a good train of thought, without following it up; but every naturalist needs the help of the ideas of others, and White stood alone in England as a real student of nature.]

[4] [*Carm.*, II., v.]

LETTER VII.

TO THE SAME.

Ringmer, near Lewes,[1] Oct. 8, 1770.

DEAR SIR,

I AM glad to hear that *Kuckalm* is to furnish you with the birds of *Jamaica;* a sight of the *hirundines* of that hot and distant island would be a great entertainment to me.[2]

The *Anni* of *Scopoli* are now in my possession; and I have read the *Annus Primus* with satisfaction: for though some parts of this work are exceptionable, and he may advance some mistaken observations; yet the ornithology of so distant a country as *Carniola* is very curious. Men that undertake only one district are much more likely to advance natural knowledge than those that grasp at more than they can possibly be acquainted with: every kingdom, every province, should have it's own *monographer.*

The reason perhaps why he mentions nothing of *Ray*'s Ornithology may be the extreme poverty and distance of his country, into which the works of our great naturalist may have never yet found their way. You have doubts, I know, whether this Ornithology is genuine, and really the work of *Scopoli:* as to myself, I think I discover strong tokens of authenticity; the style corresponds with that of his *Entomology;* and his characters of his Ordines and Genera are many of them new, expressive, and masterly. He has ventured to alter some of the *Linnæan genera* with sufficient shew of reason.

It might perhaps be mere accident that you saw so many swifts and no swallows at *Staines;* because, in my long observation of those birds, I never could discover the least degree of rivalry or hostility between the species.

Ray remarks that birds of the *gallinæ order,* as cocks and hens, partridges, and pheasants, &c. are *pulveratrices,* such as dust themselves, using that method of cleansing their feathers, and ridding themselves of their vermin. As far as I can observe, many birds that dust themselves never wash: and I once thought that

[1] [The residence of Gilbert White's aunt, Mrs. Snooke. On her death in 1780 the property descended to him.]

[2] [Gosse's *Birds of Jamaica* (1847) at length supplied the want here indicated. It does not seem that Kuckalm did anything to justify Barrington's anticipation; a paper of his on the preservation of dead birds is printed in the *Phil. Trans.* (1770).]

those birds that wash themselves would never dust; but here I find myself mistaken; for common house-sparrows are great *pulveratrices*, being frequently seen grovelling and wallowing in dusty roads; and yet they are great washers. Does not the skylark dust?

Query. Might not *Mahomet* and his followers take one method of purification from these *pulveratrices?* because I find from travellers of credit, that if a strict mussulman is journeying in a sandy desert where no water is to be found, at stated hours he strips off his clothes, and most scrupulously rubs his body over with sand or dust.

A countryman told me he had found a young *fern-owl* in the nest of a small bird on the ground; and that it was fed by the little bird. I went to see this extraordinary phenomenon, and found that it was a young cuckoo hatched in the nest of a titlark: it was become vastly too big for it's nest, appearing

"— — — — — in tenui re
"Majores pennas nido extendisse — —"[1]

and was very fierce and pugnacious, pursuing my finger, as I teazed it, for many feet from the nest, and sparring and buffetting with it's wings like a game-cock. The dupe of a dam appeared at a distance, hovering about with meat in it's mouth, and expressing the greatest solicitude.

In *July* I saw several cuckoos skimming over a large pond; and found, after some observation, that they were feeding on the *libellulæ*, or *dragon-flies;* some of which they caught as they settled on the weeds, and some as they were on the wing. Notwithstanding what *Linnæus* says,[2] I cannot be induced to believe that they are birds of prey.

[1] [Hor., *Ep.* I., 20, 21.]

[2] [In the *Systema Naturæ*, under *Cuculus canorus*, Linnæus gives the following account of its habits: "Coccyx, incubandi ipse impotens, semper parit in alienis nidis, imprimis in Motacillæ, majori ex parte singula ova, auferatis prioribus. Educat subditum adulterato foeta nido et sequitur nutrix fidelissima mensibus æstatis pulcherrimis frondescentiæ, florescentiæ, grossificationis, dum ille aridis insidens arborum ramis famelicus semper cuculans advocat nutricem, donec sub ortu caniculæ ingratus eam occidat devoretque, unde orbus victitet rapina Avicularum Larvisque Brassicæ aliarumque; non tamen in Falconem transformatur" (12th ed. (1766), vol. i., p. 168).

"The cuckoo, being unable to sit her own eggs, always lays them in the nests of other birds, especially of wagtails, for the most part one by one, after removing any that were there before. The attentive foster-parent brings up the supposititious chick, and waits upon it through the fairest months of summer, the seasons of fresh leaves, flowers and berries. During all this time the voracious cuckoo perched

This district affords some birds that are hardly ever heard of at *Selborne*. In the first place considerable flocks of *cross-beaks*[1] (*loxiæ curvirostræ*) have appeared this summer in the pine-groves belonging to this house;[2] the *water-ousel*[3] is said to haunt the mouth of the *Lewes* river, near *Newhaven;* and the *Cornish chough*[4] builds, I know, all along the chalky cliffs of the *Sussex* shore.

I was greatly pleased to see little parties of *ring-ousels* (my newly discovered migraters) scattered, at intervals, all along the *Sussex* downs from *Chichester* to *Lewes*. Let them come from whence they will, it looks very suspicious that they are cantoned along the coast in order to pass the channel when severe weather advances. They visit us again in *April*, as it should seem, in their return; and are not to be found in the dead of winter. It is remarkable that they are very tame, and seem to have no manner of apprehensions of danger from a person with a gun. There are bustards on the wide downs near *Brighthelmstone*.[5] No doubt you are acquainted with the *Sussex* downs: the prospects and rides round *Lewes* are most lovely!

As I rode along near the coast I kept a very sharp look out in the lanes and woods, hoping I might, at this time of the year, have discovered some of the summer short-winged birds of passage crowding towards the coast in order for their departure: but it was very extraordinary that I never saw a redstart, whitethroat, black-cap, uncrested wren, fly-catcher, &c.[6] And I re-

on bare boughs incessantly summons her by his cry of *cuckoo*. At last, in midsummer, he rewards her by killing and eating her. When thus deprived of her care, he gets a living by preying upon small birds and insect-larvæ, such as that of the cabbage butterfly; it is not true, however, that he is transformed into a hawk."]

[1] [See Letter XVII. to Barrington.]

[2] [The letter is dated from Ringmer, near Lewes.]

[3] [The water-ouzel, or dipper (*Cinclus aquaticus*, Bechst.), is a rare visitor to south-eastern England.]

[4] [See Letter XXXIX. to Pennant.]

[5] [Mr. Harting has the following note: "The great bustard has long ceased to frequent the South Downs except as a rare and accidental visitant. Amongst various extracts from Gilbert White's MS. diary, published by Mr. Jesse in the second series of his *Gleanings in Natural History*, is one (p. 164) wherein the author states that on November 17, 1782, he spent three hours at a lone farmhouse in the midst of the downs between Andover and Winton, where 'the carter told us that about twelve years ago he had seen a flock of eighteen bustards at one time on that farm, and once since only two'. Further on (p. 180) he adds: 'Bustards when seen on the downs resemble fallow-deer at a distance'".

The bustard is now extinct in the British Isles, except as a rare casual visitant.]

[6] [White does not mention the exact date of his ride near the coast; but his letter is dated October 8. If the ride was early in October, he might well have been too late for the mass of redstarts, etc., which are usually gone by the end of

member to have made the same remark in former years, as I usually come to this place annually about this time. The birds most common along the coast at present are the stone-chatters, whinchats, buntings, linnets, some few wheat-ears, titlarks, &c. Swallows and house-martins abound yet, induced to prolong their stay by this soft, still, dry season.

A land tortoise, which has been kept for thirty years in a little walled court belonging to the house where I now am visiting, retires under ground about the middle of *November*, and comes forth again about the middle of *April*.[1] When it first appears in the spring it discovers very little inclination towards food; but in the height of summer grows voracious: and then as the summer declines it's appetite declines; so that for the last six weeks in autumn it hardly eats at all. Milky plants, such as lettuces, dandelions, sowthistles, are it's favourite dish. In a neighbouring village one was kept till by tradition it was supposed to be an hundred years old. An instance of vast longevity in such a poor reptile!

LETTER VIII.

TO THE SAME.

Selborne, Dec. 20, 1770.

DEAR SIR,

THE birds that I took for *aberdavines*[2] were reed-sparrows (*passeres torquati*).

There are doubtless many home internal migrations within this

September, leaving only a few stragglers. Even on September 24, at Bexhill, also on the Sussex coast, the writer of this note saw none of these birds, only those species mentioned by White, *viz.*, linnets, pipits, stonechats, wheat-ears, etc. See p. 277 of *Summer Studies of Birds and Books*.

By "uncrested wren" White probably means chiffchaff, willow-wren, and their kind.]

[1] [The tortoise is further described in Letters VII. and L. to Barrington, while "More Particulars respecting the Old Family Tortoise" are given at the end of the *Antiquities*. Bell identified it with *Testudo marginata*, a North African species. The shell is preserved in the British Museum, and has been figured in Bennett's edition of White's *Selborne* (p. 361).]

[2] [*Aberdavine* or *abordevine* is an old name for the siskin (*Chrysomitris spinus*, L.). The name *siskin* is probably of German origin. This is a kind of bird of which White could have had no personal knowledge, or he would not have mistaken it for the reed-sparrow (*i.e.*, reed-bunting). There is no resemblance between the two species except the black head and throat in the breeding season.]

kingdom that want to be better understood: witness those vast flocks of hen chaffinches that appear with us in the winter without hardly any cocks among them. Now was there a due proportion of each sex, it should seem very improbable that any one district should produce such numbers of these little birds; and much more when only one half of the species appears: therefore we may conclude that the *fringillæ cœlebes*, for some good purposes, have a peculiar migration of their own in which the sexes part. Nor should it seem so wonderful that the intercourse of sexes in this species of birds should be interrupted in winter; since in many animals, and particularly in bucks and does, the sexes herd separately, except at the season when commerce is necessary for the continuance of the breed. For this matter of the chaffinches see *Fauna Suecica*, p. 85, and *Systema Naturæ*, p. 318. I see every winter vast flights of hen chaffinches, but none of cocks.

Your method of accounting for the periodical motions of the *British* singing birds, or birds of flight, is a very probable one; since the matter of food is a great regulator of the actions and proceedings of the brute creation: there is but one that can be set in competition with it, and that is love. But I cannot quite acquiesce with you in one circumstance when you advance that, "when they have thus feasted, they again separate into small "parties of five or six, and get the best fare they can within a "certain district, having no inducement to go in quest of fresh-"turned earth". Now if you mean that the business of congregating is quite at an end from the conclusion of wheat-sowing to the season of barley and oats, it is not the case with us; for larks and chaffinches, and particularly linnets, flock and congregate as much in the very dead of winter as when the husbandman is busy with his ploughs and harrows.

Sure there can be no doubt but that woodcocks and fieldfares leave us in the spring, in order to cross the seas, and to retire to some districts more suitable to the purpose of breeding. That the former pair before they retire, and that the hens are forward with egg, I myself, when I was a sportsman, have often experienced. It cannot indeed be denied but that now and then we hear of a woodcock's nest, or young birds, discovered in some part or other of this island: but then they are always mentioned as rarities, and somewhat out of the common course of things: but as to redwings and fieldfares, no sportsman or naturalist has ever yet, that I could hear, pretended to have found the nest or

young of those species in any part of these kingdoms.[1] And I the more admire at this instance as extraordinary, since, to all appearance, the same food in summer as well as in winter might support them here which maintains their congeners, the blackbirds and thrushes, did they chuse to stay the summer through. From hence it appears that it is not food alone which determines some species of birds with regard to their stay or departure. Fieldfares and redwings disappear sooner or later according as the warm weather comes on earlier or later. For I well remember, after that dreadful winter of 1739-40, that cold north-east winds continued to blow on through *April* and *May*, and that these kinds of birds (what few remained of them) did not depart as usual, but were seen lingering about till the beginning of *June*.

The best authority that we can have for the nidification of the birds above mentioned in any district, is the testimony of faunists that have written professedly the natural history of particular countries. Now, as to the fieldfare, *Linnæus*, in his Fauna Suecica, says of it that "*maximis in arboribus nidificat*": and of the redwing he says, in the same place, that "*nidificat in mediis "arbusculis, sive sepibus: ova sex cæruleo-viridia maculis nigris "variis*". Hence we may be assured that fieldfares and redwings breed in *Sweden*. *Scopoli* says, in his *Annus Primus*, of the wood-cock, that "*nupta ad nos venit circa æquinoctium vernale*": meaning in *Tirol*, of which he is a native. And afterwards he adds "*nidificat in paludibus alpinis: ova ponit 3 - - - 5*". It does not appear from *Kramer* that woodcocks breed at all in *Austria*: but he says "*Avis hæc septentrionalium provinciarum "æstivo tempore incola est; ubi plerumque nidificat. Appropinquante "hyeme australiores provincias petit: hinc circa plenilunium mensis "Octobris plerumque Austriam transmigrat. Tunc rursus circa "plenilunium potissimum mensis Martii per Austriam matrimonio "juncta ad septentrionales provincias redit.*" For the whole passage (which I have abridged) see *Elenchus*, &c. p. 351. This seems to be a full proof of the migration of woodcocks; though little is proved concerning the place of breeding.

P.S. There fell in the county of *Rutland*, in three weeks of this present very wet weather, seven inches and an half of rain, which is more than has fallen in any three weeks for these thirty years past in that part of the world. A mean quantity in that county for one year is twenty inches and an half.

[1] [Mr. Harting quotes a number of instances in which both the redwing and the fieldfare are reported to have nested in the British Islands.]

LETTER IX.

TO THE SAME.

Fyfield, near Andover, Feb. 12, 1771.

DEAR SIR,

You are, I know, no great friend to migration;[1] and the well attested accounts from various parts of the kingdom seem to justify you in your suspicions, that at least many of the swallow kind do not leave us in the winter, but lay themselves up like insects and bats, in a torpid state, and slumber away the more uncomfortable months till the return of the sun and fine weather awakens them.

But then we must not, I think, deny migration in general; because migration certainly does subsist in some places, as my brother in *Andalusia* has fully informed me. Of the motions of these birds he has ocular demonstration, for many weeks together, both spring and fall: during which periods myriads of the swallow kind traverse the Straits from north to south, and from south to north, according to the season. And these vast migrations consist not only of *hirundines* but of *bee-birds, hoopoes, oro pendolos,*[2] or *golden thrushes,* &c. &c. and also many of our *soft-billed summer-birds of passage;* and moreover of birds which never leave us, such as all the various sorts of hawks and kites.[3] Old *Belon,* two hundred years ago, gives a curious account of the incredible armies of hawks and kites which he saw in the spring-time traversing the *Thracian Bosphorus* from *Asia* to *Europe.* Besides the above mentioned, he remarks that the procession is swelled by whole troops of eagles and vultures.

Now it is no wonder that birds residing in *Africa* should re-

[1] [In Barrington's *Miscellanies* (1781) is an essay "On the periodical appearing and disappearing of certain birds at different times of the year," and another "On the torpidity of the swallow tribe when they disappear". Both are very sceptical as to migration, and probably affected White's view of the question.]

[2] [Golden orioles (*Oriolus galbula*, L.).]

[3] [One or two species of hawks are migrants even with us: *e.g.*, the honey-buzzard (see above, Letter XLIII. to Pennant), which comes in spring, and the rough-legged buzzard, which is an irregular autumnal visitor. The kestrel migrates in winter from north to south within our island. White's difficulty about these movements, which he expresses in the next paragraph, does not admit of a complete solution, nor can the movements of other birds be satisfactorily explained; but to some extent, no doubt, the hawks are influenced by the movements of the small birds on which they prey (Harting); they will gather in numbers where there is a plague of field-voles.]

treat before the sun as it advances, and retire to milder regions, and especially birds of prey, whose blood being heated with hot animal food, are more impatient of a sultry climate: but then I cannot help wondering why kites and hawks, and such hardy birds as are known to defy all the severity of *England*, and even of *Sweden* and all north *Europe*, should want to migrate from the south of *Europe*, and be dissatisfied with the winters of *Andalusia*.

It does not appear to me that much stress may be laid on the difficulty and hazard that birds must run in their migrations, by reason of vast oceans, cross winds, &c.; because, if we reflect, a bird may travel from *England* to the equator without launching out and exposing itself to boundless seas, and that by crossing the water at *Dover*, and again at *Gibraltar*. And I with the more confidence advance this obvious remark, because my brother has always found that some of his birds, and particularly the swallow kind, are very sparing of their pains in crossing the *Mediterranean:* for when arrived at *Gibraltar*, they do not

> "— — — Rang'd in figure wedge their way,
> "— — — — — And set forth
> "Their airy caravan high over seas
> "Flying, and over lands with mutual wing
> "Easing their flight: — — — —" MILTON.[1]

but scout and hurry along in little detached parties of six or seven in a company; and sweeping low, just over the surface of the land and water, direct their course to the opposite continent at the narrowest passage they can find. They usually slope across the bay to the south-west, and so pass over opposite to *Tangier*, which, it seems, is the narrowest space.[2]

In former letters we have considered whether it was probable that woodcocks in moon-shiny nights cross the *German* ocean from *Scandinavia*. As a proof that birds of less speed may pass that sea, considerable as it is, I shall relate the following incident, which, though mentioned to have happened so many years ago, was strictly matter of fact:—As some people were shooting in the parish of *Trotton*, in the county of *Sussex*, they killed a duck in that dreadful winter 1708-9, with a silver collar about it's neck,[3] on which were engraven the arms of the king of *Denmark*. This

[1] [*Paradise Lost*, vii., 426-30.]

[2] [See Col. Irby's *Ornithology of the Straits of Gibraltar*, p. 14. So, too, though White was not aware of it, our own swallows and other birds pass in parties along our south coast eastwards, until the Channel has narrowed sufficiently for their purposes.]

[3] I have read a like anecdote of a swan.

anecdote the rector of *Trotton* at that time has often told to a near relation of mine; and, to the best of my remembrance, the collar was in the possession of the rector.[1]

At present I do not know any body near the sea-side that will take the trouble to remark at what time of the moon woodcocks first come: if I lived near the sea myself I would soon tell you more of the matter. One thing I used to observe when I was a sportsman, that there were times in which woodcocks were so sluggish and sleepy that they would drop again when flushed just before the spaniels, nay just at the muzzle of a gun that had been fired at them: whether this strange laziness was the effect of a recent fatiguing journey I shall not presume to say.

Nightingales not only never reach *Northumberland* and *Scotland*, but also, as I have been always told, *Devonshire* and *Cornwall*. In those two last counties we cannot attribute the failure of them to the want of warmth: the defect in the west is rather a presumptive argument that these birds come over to us from the continent at the narrowest passage, and do not stroll so far westward.[2]

Let me hear from your own observation whether skylarks do not dust. I think they do: and if they do, whether they wash also.

The *alauda pratensis* of *Ray* was the poor dupe that was educating the booby of a cuckoo mentioned in my letter of *October* last.

Your letter came too late for me to procure a ring-ousel for Mr. *Tunstal* during their autumnal visit; but I will endeavour to get him one when they call on us again in *April*. I am glad that you and that gentleman saw my *Andalusian* birds; I hope they answered your expectation. *Royston*, or grey crows, are winter birds that come much about the same time with the woodcock: they, like the fieldfare and redwing, have no apparent reason for migration; for as they fare in the winter like their congeners, so might they in all appearance in the summer.

[1] [Mr. Harting has an interesting note on this passage, in which he maintains that the "duck" was really a cormorant; he points out that cormorants were in the seventeenth century often trained for fishing purposes, and wore collars, usually of leather. But it is hardly likely that a cormorant could be mistaken for a duck.]

[2] [White was here correct in his view of the nightingale's distribution. A line drawn from Start Point to the mouth of the Humber will include, to the south and east, all our nightingales but a few stragglers (Newton). If it be true, as has been maintained, that this species migrates "almost due north and south" (Blyth), White's inference that they come over to us at the narrowest passage is not correct; but the facts do not seem to be as yet accurately ascertained.]

Was not *Tenant*, when a boy, mistaken? did he not find a missel-thrush's nest, and take it for the nest of a fieldfare?

The stock-dove, or wood-pigeon, *œnas Raii*, is the last winter bird of passage which appears with us; and is not seen till towards the end of *November*:[1] about twenty years ago they abounded in the district of *Selborne*; and strings of them were seen morning and evening that reached a mile or more: but since the beechen woods have been greatly thinned they are much decreased in number. The ring-dove, *palumbus Raii*, stays with us the whole year, and breeds several times through the summer.

Before I received your letter of *October* last I had just remarked in my journal that the trees were unusually green. This uncommon verdure lasted on late into *November*; and may be accounted for from a late spring, a cool and moist summer; but more particularly from vast armies of chafers, or tree-beetles, which, in many places, reduced whole woods to a leafless naked state. These trees shot again at *Midsummer*, and then retained their foliage till very late in the year.

My musical friend, at whose house I am now visiting, has tried all the owls that are his near neighbours with a pitch-pipe set at concert-pitch, and finds they all hoot in B flat. He will examine the nightingales next spring.

I am, &c. &c.

LETTER X.

TO THE SAME.

Selborne, Aug. 1, 1771.

Dear Sir,

From what follows, it will appear that neither owls nor cuckoos keep to one note. A friend remarks that many (most) of his owls hoot in B flat; but that one went almost half a note below A. The pipe he tried their notes by was a common half-crown pitch-pipe, such as masters use for tuning of harpsichords; it was the common *London* pitch.

A neighbour of mine, who is said to have a nice ear, remarks that the owls about this village hoot in three different keys, in G

[1] [See note on Letter XLIV. to Pennant.]

flat, or F sharp, in B flat and A flat. He heard two hooting to each other, the one in A flat, and the other in B flat. *Query:* Do these different notes proceed from different species, or only from various individuals? The same person finds upon trial that the note of the cuckoo (of which we have but one species) varies in different individuals; for, about *Selborne* wood, he found they were mostly in D: he heard two sing together, the one in D, the other in D sharp, who made a disagreeable concert: he afterwards heard one in D sharp, and about *Wolmer-forest* some in C.[1] As to nightingales, he says that their notes are so short, and their transitions so rapid, that he cannot well ascertain their key. Perhaps in a cage, and in a room, their notes may be more distinguishable. This person has tried to settle the notes of a swift, and of several other small birds, but cannot bring them to any criterion.

As I have often remarked that redwings are some of the first birds that suffer with us in severe weather, it is no wonder at all that they retreat from *Scandinavian* winters: and much more the *ordo* of *grallæ*, who, all to a bird, forsake the northern parts of *Europe* at the approach of winter. "*Grallæ tanquam conjuratæ "unanimiter in fugam se conjiciunt; ne earum unicam quidem inter "nos habitantem invenire possimus; ut enim æstate in australibus "degere nequeunt ob defectum lumbricorum, terramque siccam; ita "nec in frigidis ob eandem causam,*" says *Eckmarck* the *Swede*, in his ingenious little treatise called *Migrationes Avium*, which by all means you ought to read while your thoughts run on the subject of migration. See *Amœnitates Academicæ*, vol. 4, p. 565.

Birds may be so circumstanced as to be obliged to migrate in one country and not in another: but the *grallæ*, (which procure their food from marshes and boggy grounds) must in winter forsake the more northerly parts of *Europe*, or perish for want of food.

I am glad you are making inquiries from *Linnæus* concerning the woodcock: it is expected of him that he should be able to account for the motions and manner of life of the animals of his own *Fauna*.

[1] [The attempt to express the keys in which birds sing is useless, simply because they do not use our, or any musical scale (*see* the quotation from Gassendus in Letter LVI. to Barrington). Single notes of any kind can be accurately set down in musical notation, and it may happen that the interval agrees with some interval in a musical scale. White does not distinguish between musical *notes* and *keys*.]

Faunists, as you observe, are too apt to acquiesce in bare descriptions, and a few synonyms: the reason is plain; because all that may be done at home in a man's study, but the investigation of the life and conversation of animals, is a concern of much more trouble and difficulty, and is not to be attained but by the active and inquisitive, and by those that reside much in the country.

Foreign systematics are, I observe, much too vague in their specific differences; which are almost universally constituted by one or two particular marks, the rest of the description running in general terms. But our countryman, the excellent Mr. *Ray*, is the only describer that conveys some precise idea in every term or word, maintaining his superiority over his followers and imitators in spite of the advantage of fresh discoveries and modern information.

At this distance of years it is not in my power to recollect at what periods woodcocks used to be sluggish or alert when I was a sportsman: but, upon my mentioning this circumstance to a friend, he thinks he has observed them to be remarkably listless against snowy foul weather: if this should be the case, then the inaptitude for flying arises only from an eagerness for food; as sheep are observed to be very intent on grazing against stormy wet evenings.

I am, &c. &c.

LETTER XI.

TO THE SAME.

Selborne, Feb. 8, 1772.

Dear Sir,

When I ride about in the winter, and see such prodigious flocks of various kinds of birds, I cannot help admiring at these congregations, and wishing that it was in my power to account for those appearances almost peculiar to the season.[1] The two

[1] [The natural tendency of most birds is to associate together except in the breeding season, when they separate in pairs for the propagation of the species. There are, however, exceptions to both parts of this general statement. Some birds, and especially those which pair for life, *e.g.*, the hawks and eagles, rarely flock, except for migration. Others, as rooks, herons, gulls, even *breed* in company. White's remarks are acute and sensible; but the subject still calls both for observation and explanation. Probably the advantages to be gained by flocking may be best illustrated by observing the habits of the starling, which is seen in flocks nearly

great motives which regulate the proceedings of the brute creation are love and hunger; the former incites animals to perpetuate their kind, the latter induces them to preserve individuals: whether either of these should seem to be the ruling passion in the matter of congregating is to be considered. As to love, that is out of the question at a time of the year when that soft passion is not indulged: besides, during the amorous season, such a jealousy prevails between the male birds that they can hardly bear to be together in the same hedge or field. Most of the singing and elation of spirits of that time seem to me to be the effect of rivalry and emulation: and it is to this spirit of jealousy that I chiefly attribute the equal dispersion of birds in the spring over the face of the country.

Now as to the business of food: as these animals are actuated by instinct to hunt for necessary food, they should not, one would suppose, crowd together in pursuit of sustenance at a time when it is most likely to fail; yet such associations do take place in hard weather chiefly, and thicken as the severity increases. As some kind of self-interest and self-defence is no doubt the motive for the proceeding, may it not arise from the helplessness of their state in such rigorous seasons; as men crowd together, when under great calamities, though they know not why? Perhaps approximation may dispel some degree of cold; and a crowd may make each individual appear safer from the ravages of birds of prey and other dangers.

If I admire when I see how much congenerous birds love to congregate, I am the more struck when I see incongruous ones in such strict amity. If we do not much wonder to see a flock of rooks usually attended by a train of daws, yet it is strange that the former should so frequently have a flight of starlings for their satellites. Is it because rooks have a more discerning scent than their attendants, and can lead them to spots more productive of food? Anatomists say that rooks, by reason of two large nerves which run down between the eyes into the upper mandible, have a more delicate feeling in their beaks than other round-billed birds, and can grope for their meat when out of sight. Perhaps then their associates attend them on the motive of interest, as greyhounds wait on the motions of their finders; and as lions are said to do on the yelpings of jackalls. Lapwings and starlings sometimes associate.

all the year round; often, as White notes, in company with birds of other species. See a useful paper by H. E. Forrest in the *Zoologist* for March, 1900; also Letter XXIV. to Barrington.]

LETTER XII.

TO THE SAME.

March 9, 1772.

DEAR SIR,

As a gentleman and myself were walking on the fourth of last *November* round the sea-banks at *Newhaven*, near the mouth of the *Lewes* river, in pursuit of natural knowledge, we were surprised to see three house-swallows gliding very swiftly by us. That morning was rather chilly, with the wind at north-west; but the tenor of the weather for some time before had been delicate, and the noons remarkably warm. From this incident, and from repeated accounts which I meet with, I am more and more induced to believe that many of the swallow kind do not depart from this island; but lay themselves up in holes and caverns; and do, insect-like and bat-like, come forth at mild times, and then retire again to their *latebræ*.[1] Nor make I the least doubt but that, if I lived at *Newhaven*, *Seaford*, *Brighthelmstone*, or any of those towns near the chalk-cliffs of the *Sussex* coast, by proper observations, I should see swallows stirring at periods of the winter, when the noons were soft and inviting, and the sun warm and invigorating. And I am the more of this opinion from what I have remarked during some of our late springs, that though some swallows did make their appearance about the usual time, *viz.* the thirteenth or fourteenth of *April*, yet meeting with an harsh reception, and blustering cold north-east winds, they immediately withdrew, absconding for several days, till the weather gave them better encouragement.

LETTER XIII.

TO THE SAME.

April 12, 1772.

DEAR SIR,

WHILE I was in *Sussex* last autumn my residence was at the village near *Lewes*, from whence I had formerly the pleasure of writing to you. On the first of *November* I remarked that the

[1] [It is strange that it should not have occurred to White that these swallows might be stragglers following in the wake of a migrating body.]

old tortoise,[1] formerly mentioned, began first to dig the ground in order to the forming it's hybernaculum, which it had fixed on just beside a great tuft of hepaticas. It scrapes out the ground with it's fore-feet, and throws it up over it's back with it's hind; but the motion of it's legs is ridiculously slow, little exceeding the hour-hand of a clock; and suitable to the composure of an animal said to be a whole month in performing one feat of copulation. Nothing can be more assiduous than this creature night and day in scooping the earth, and forcing it's great body into the cavity; but, as the noons of that season proved unusually warm and sunny, it was continually interrupted, and called forth by the heat in the middle of the day; and though I continued there till the thirteenth of *November*, yet the work remained unfinished. Harsher weather, and frosty mornings, would have quickened it's operations. No part of it's behaviour ever struck me more than the extreme timidity it always expresses with regard to rain; for though it has a shell that would secure it against the wheel of a loaded cart, yet does it discover as much solicitude about rain as a lady dressed in all her best attire, shuffling away on the first sprinklings, and running it's head up in a corner. If attended to, it becomes an excellent weather-glass; for as sure as it walks elate, and as it were on tiptoe, feeding with great earnestness in a morning, so sure will it rain before night. It is totally a diurnal animal, and never pretends to stir after it becomes dark. The tortoise, like other reptiles, has an arbitrary stomach as well as lungs; and can refrain from eating as well as breathing for a great part of the year. When first awakened it eats nothing; nor again in the autumn before it retires: through the height of the summer it feeds voraciously, devouring all the food that comes in it's way. I was much taken with it's sagacity in discerning those that do it kind offices: for, as soon as the good old lady comes in sight who has waited on it for more than thirty years, it hobbles towards it's benefactress with aukward alacrity; but remains inattentive to strangers. Thus not only "*the ox knoweth his owner, and the ass his master's crib*," [2] but the most abject reptile and torpid of beings distinguishes the hand that feeds it, and is touched with the feelings of gratitude!

I am, &c. &c.

P.S. In about three days after I left *Sussex* the tortoise retired into the ground under the hepatica.

[1] [See Letters VII. and L. to Barrington.]

[2] Isaiah i. 3.

LETTER XIV.

TO THE SAME.

Selborne, March 26, 1773.

DEAR SIR,

THE more I reflect on the στοργη of animals, the more I am astonished at it's effects. Nor is the violence of this affection more wonderful than the shortness of it's duration. Thus every hen is in her turn the virago of the yard, in proportion to the helplessness of her brood; and will fly in the face of a dog or a sow in defence of those chickens, which in a few weeks she will drive before her with relentless cruelty.

This affection sublimes the passions, quickens the invention, and sharpens the sagacity of the brute creation. Thus an hen, just become a mother, is no longer that placid bird she used to be, but with feathers standing on end, wings hovering, and clocking note, she runs about like one possessed. Dams will throw themselves in the way of the greatest danger in order to avert it from their progeny. Thus a partridge will tumble along before a sportsman in order to draw away the dogs from her helpless covey. In the time of nidification the most feeble birds will assault the most rapacious. All the hirundines of a village are up in arms at the sight of an hawk, whom they will persecute till he leaves that district. A very exact observer[1] has often remarked that a pair of ravens nesting in the rock of *Gibraltar* would suffer no vulture or eagle to rest near their station, but would drive them from the hill with an amazing fury: even the blue thrush at the season of breeding would dart out from the clefts of the rocks to chase away the kestril, or the sparrow-hawk. If you stand near the nest of a bird that has young, she will not be induced to betray them by an inadvertent fondness, but will wait about at a distance with meat in her mouth for an hour together.

Should I farther corroborate what I have advanced above by some anecdotes which I probably may have mentioned before in conversation, yet you will, I trust, pardon the repetition for the sake of the illustration.

The flycatcher of the Zoology (the *stoparola* of *Ray*) builds

[1] [His brother John, chaplain at Gibraltar.]

every year in the vines that grow on the walls of my house. A pair of these little birds had one year inadvertently placed their nest on a naked bough, perhaps in a shady time, not being aware of the inconvenience that followed. But an hot sunny season coming on before the brood was half fledged, the reflection of the wall became insupportable, and must inevitably have destroyed the tender young, had not affection suggested an expedient, and prompted the parent-birds to hover over the nest all the hotter hours, while with wings expanded, and mouths gaping for breath, they screened off the heat from their suffering offspring.

A farther instance I once saw of notable sagacity in a willow-wren, which had built in a bank in my fields. This bird a friend and myself had observed as she sat in her nest; but were particularly careful not to disturb her, though we saw she eyed us with some degree of jealousy. Some days after as we passed that way we were desirous of remarking how this brood went on; but no nest could be found, till I happened to take up a large bundle of long green moss, as it were, carelessly thrown over the nest in order to dodge the eye of any impertinent intruder.

A still more remarkable mixture of sagacity and instinct occurred to me one day as my people were pulling off the lining of an hotbed, in order to add some fresh dung. From out of the side of this bed leaped an animal with great agility that made a most grotesque figure; nor was it without great difficulty that it could be taken; when it proved to be a large white-bellied field-mouse with three or four young clinging to her teats by their mouths and feet. It was amazing that the desultory and rapid motions of this dam should not oblige her litter to quit their hold, especially when it appeared that they were so young as to be both naked and blind!

To these instances of tender attachment, many more of which might be daily discovered by those that are studious of nature, may be opposed that rage of affection, that monstrous perversion of the στοργη, which induces some females of the brute creation to devour their young because their owners have handled them too freely, or removed them from place to place! Swine, and sometimes the more gentle race of dogs and cats, are guilty of this horrid and preposterous murder. When I hear now and then of an abandoned mother that destroys her offspring, I am not so much amazed; since reason perverted, and the bad passions let loose, are capable of any enormity: but why the parental feelings of brutes, that usually flow in one most uniform

tenor, should sometimes be so extravagantly diverted, I leave to abler philosophers than myself to determine.

I am, &c.

LETTER XV.

TO THE SAME.

Selborne, July 8, 1773.

Dear Sir,

Some young men went down lately to a pond on the verge of *Wolmer-forest* to hunt flappers, or young wild-ducks, many of which they caught, and, among the rest, some very minute yet well-fledged wild-fowls alive, which upon examination I found to be teals. I did not know till then that teals ever bred in the south of *England*, and was much pleased with the discovery: this I look upon as a great stroke in natural history.

We have had, ever since I can remember, a pair of white owls that constantly breed under the eaves of this church. As I have paid good attention to the manner of life of these birds during their season of breeding, which lasts the summer through, the following remarks may not perhaps be unacceptable:—About an hour before sunset (for then the mice begin to run) they sally forth in quest of prey, and hunt all round the hedges of meadows and small enclosures for them, which seem to be their only food. In this irregular country we can stand on an eminence and see them beat the fields over like a setting-dog, and often drop down in the grass or corn. I have minuted these birds with my watch for an hour together, and have found that they return to their nests, the one or the other of them, about once in five minutes; reflecting at the same time on the adroitness that every animal is possessed of as far as regards the well being of itself and offspring. But a piece of address, which they shew when they return loaded, should not, I think, be passed over in silence.—As they take their prey with their claws, so they carry it in their claws to their nest: but, as the feet are necessary in their ascent under the tiles, they constantly perch first on the roof of the chancel, and shift the mouse from their claws to their bill, that the feet may be at liberty to take hold of the plate on the wall as they are rising under the eaves.

White owls seem not (but in this I am not positive) to hoot at all: all that clamorous hooting appears to me to come from the wood kinds.[1] The white owl does indeed snore and hiss in a tremendous manner; and these menaces well answer the intention of intimidating: for I have known a whole village up in arms on such an occasion, imagining the church-yard to be full of goblins and spectres. White owls also often scream horribly as they fly along; from this screaming probably arose the common people's imaginary species of *screech-owl*, which they superstitiously think attends the windows of dying persons. The plumage of the remiges of the wings of every species of owl that I have yet examined is remarkably soft and pliant. Perhaps it may be necessary that the wings of these birds should not make much resistance or rushing, that they may be enabled to steal through the air unheard upon a nimble and watchful quarry.

While I am talking of owls, it may not be improper to mention what I was told by a gentleman of the county of *Wilts*. As they were grubbing a vast hollow pollard-ash that had been the mansion of owls for centuries, he discovered at the bottom a mass of matter that at first he could not account for. After some examination, he found it was a congeries of the bones of mice (and perhaps of birds and bats) that had been heaping together for ages, being cast up in pellets out of the crops of many generations of inhabitants. For owls cast up the bones, fur, and feathers, of what they devour, after the manner of hawks. He believes, he told me, that there were bushels of this kind of substance.[2]

When brown owls hoot their throats swell as big as an hen's egg. I have known an owl of this species live a full year without any water. Perhaps the case may be the same with all birds of prey. When owls fly they stretch out their legs behind them as a balance to their large heavy heads: for as most nocturnal birds have large eyes and ears they must have large heads to contain them. Large eyes I presume are necessary to

[1] [The question whether the white owl hoots like the brown owl has often been discussed. The evidence seems to point to the conclusion that it occasionally does so. White's reservation, "but in this I am not positive," may be noted with advantage; it illustrates the difficulties which attend the conscientious observation of birds. We learn from the beginning of this letter that White had paid constant attention to this species for many summers; yet he will not be positive on this point.]

[2] [Bones of frogs sometimes abound in such accumulations.]

collect every ray of light, and large concave ears to command the smallest degree of sound or noise.

I am, etc.

It will be proper to premise here that the sixteenth, eighteenth, twentieth and twenty-first letters have been published already in the Philosophical Transactions: but as nicer observation has furnished several corrections and additions, it is hoped that the republication of them will not give offence; especially as these sheets would be very imperfect without them, and as they will be new to many readers who had no opportunity of seeing them when they made their first appearance.

The *hirundines* are a most inoffensive, harmless, entertaining, social, and useful tribe of birds: they touch no fruit in our gardens; delight, all except one species, in attaching themselves to our houses; amuse us with their migrations, songs, and marvellous agility; and clear our outlets from the annoyances of gnats and other troublesome insects. Some districts in the south seas, near *Guiaquil*,[1] are desolated, it seems, by the infinite swarms of venomous mosquitoes, which fill the air, and render those coasts insupportable. It would be worth inquiring whether any species of *hirundines* is found in those regions. Whoever contemplates the myriads of insects that sport in the sunbeams of a summer evening in this country, will soon be convinced to what a degree our atmosphere would be choaked with them was it not for the friendly interposition of the swallow tribe.

Many species of birds have their peculiar *lice;* but the *hirundines* alone seem to be annoyed with *dipterous* insects,[2] which infest every species, and are so large, in proportion to themselves, that they must be extremely irksome and injurious to them. These are the *hippoboscæ hirundinis*, with narrow subulated wings, abounding in every nest; and are hatched by the warmth of the bird's own body during incubation, and crawl about under its feathers.

A *species* of them is familiar to horsemen in the south of *England* under the name of *forest-fly;*[3] and to some of *side-fly*, from it's running sideways like a crab. It creeps under the tails, and about the groins, of horses, which, at their first coming out of the north, are rendered half frantic by the tickling sensation; while our own breed little regards them.

[1] See *Ulloa*'s Travels.

[2] [Dipterous insects infest various other birds, each as a rule frequenting one particular host; others are parasitic upon quadrupeds (sheep, horse, deer, bats); or upon bees.]

[3] [*Hippobosca equina*, L.]

The curious *Réaumur* discovered the large eggs, or rather *pupæ*, of these flies as big as the flies themselves, which he hatched in his own bosom. Any person that will take the trouble to examine the old nests of either species of swallows may find in them the black shining cases or skins of the *pupæ* of these insects: but for other particulars, too long for this place, we refer the reader to *l'Histoire d'Insectes* of that admirable entomologist. Tom. iv. pl. 11.[1]

LETTER XVI.

TO THE SAME.

Selborne, Nov. 20, 1773.

DEAR SIR,

IN obedience to your injunctions I sit down to give you some account of the house-martin, or martlet; and, if my monography of this little domestic and familiar bird should happen to meet with your approbation, I may probably soon extend my enquiries to the rest of the *British hirundines*—the swallow, the swift, and the bank-martin.

A few house-martins begin to appear about the sixteenth of *April;* usually some few days later than the swallow. For some time after they appear the hirundines in general pay no attention to the business of nidification, but play and sport about, either to recruit from the fatigue of their journey, if they do migrate at all, or else that their blood may recover it's true tone and texture after it has been so long benumbed by the severities of winter. About the middle of *May,* if the weather be fine, the martin begins to think in earnest of providing a mansion for it's family. The crust or shell of this nest seems to be formed of such dirt or loam as comes most readily to hand, and is tempered and wrought together with little bits of broken straws to render it tough and tenacious. As this bird often builds against a perpendicular wall without any projecting ledge under, it requires it's utmost efforts to get the first foundation firmly fixed, so that it may safely carry the superstructure. On this occasion the bird not only clings with it's claws, but partly supports itself by

[1] [*Mémoires pour servir à l'Histoire des Insectes, par M. de Réaumur.* Paris: 6 vols., 4to, 1734-42.]

strongly inclining it's tail against the wall, making that a fulcrum; and thus steadied it works and plasters the materials into the face of the brick or stone. But then, that this work may not, while it is soft and green, pull itself down by it's own weight, the provident architect has prudence and forbearance enough not to advance her work too fast; but by building only in the morning, and by dedicating the rest of the day to food and amusement, gives it sufficient time to dry and harden. About half an inch seems to be a sufficient layer for a day. Thus careful workmen when they build mud-walls (informed at first perhaps by this little bird) raise but a moderate layer at a time, and then desist; lest the work should become top-heavy, and so be ruined by it's own weight. By this method in about ten or twelve days is formed an hemispheric nest with a small aperture towards the top, strong, compact, and warm; and perfectly fitted for all the purposes for which it was intended. But then nothing is more common than for the house-sparrow, as soon as the shell is finished, to seize on it as it's own, to eject the owner, and to line it after it's own manner.

After so much labour is bestowed in erecting a mansion, as Nature seldom works in vain, martins will breed on for several years together in the same nest, where it happens to be well sheltered and secure from the injuries of weather. The shell or crust of the nest is a sort of rustic-work full of knobs and protuberances on the outside: nor is the inside of those that I have examined smoothed with any exactness at all; but is rendered soft and warm, and fit for incubation, by a lining of small straws, grasses, and feathers; and sometimes by a bed of moss interwoven with wool. In this nest they tread, or engender, frequently during the time of building; and the hen lays from three to five white eggs.

At first when the young are hatched, and are in a naked and helpless condition, the parent birds, with tender assiduity, carry out what comes away from their young. Was it not for this affectionate cleanliness the nestlings would soon be burnt up, and destroyed in so deep and hollow a nest, by their own caustic excrement. In the quadruped creation the same neat precaution is made use of; particularly among dogs and cats, where the dams lick away what proceeds from their young. But in birds there seems to be a particular provision, that the dung of nestlings is enveloped into a tough kind of jelly, and therefore is the easier conveyed off without soiling or daubing. Yet, as

nature is cleanly in all her ways, the young perform this office for themselves in a little time by thrusting their tails out at the aperture of their nest. As the young of small birds presently arrive at their ἡλικία, or full growth, they soon become impatient of confinement, and sit all day with their heads out at the orifice, where the dams, by clinging to the nests, supply them with food from morning to night. For a time the young are fed on the wing by their parents; but the feat is done by so quick and almost imperceptible a slight, that a person must have attended very exactly to their motions before he would be able to perceive it. As soon as the young are able to shift for themselves, the dams immediately turn their thoughts to the business of a second brood: while the first flight, shaken off and rejected by their nurses, congregate in great flocks, and are the birds that are seen clustering and hovering on sunny mornings and evenings round towers and steeples, and on the roofs of churches and houses. These congregatings usually begin to take place about the first week in *August;* and therefore we may conclude that by that time the first flight is pretty well over. The young of this species do not quit their abodes all together; but the more forward birds get abroad some days before the rest. These approaching the eaves of buildings, and playing about before them, make people think that several old ones attend one nest. They are often capricious in fixing on a nesting-place, beginning many edifices, and leaving them unfinished; but when once a nest is completed in a sheltered place, it serves for several seasons. Those which breed in a ready finished house get the start in hatching of those that build new by ten days or a fortnight. These industrious artificers are at their labours in the long days before four in the morning: when they fix their materials they plaster them on with their chins, moving their heads with a quick vibratory motion. They dip and wash as they fly sometimes in very hot weather, but not so frequently as swallows. It has been observed that martins usually build to a north-east or north-west aspect, that the heat of the sun may not crack and destroy their nests: but instances are also remembered where they bred for many years in vast abundance in an hot stifled inn-yard, against a wall facing to the south.

Birds in general are wise in their choice of situation: but in this neighbourhood every summer is seen a strong proof to the contrary at an house without eaves in an exposed district, where

some martins build year by year in the corners of the windows. But, as the corners of these windows (which face to the south-east and south-west) are too shallow, the nests are washed down every hard rain; and yet these birds drudge on to no purpose from summer to summer, without changing their aspect or house. It is a piteous sight to see them labouring when half their nest is washed away and bringing dirt - - - *"generis lapsi sarcire ruinas"*.[1] Thus is instinct a most wonderful unequal faculty; in some instances so much above reason, in other respects so far below it! Martins love to frequent towns, especially if there are great lakes and rivers at hand; nay they even affect the close air of *London*. And I have not only seen them nesting in the *Borough*, but even in the *Strand* and *Fleet-street;* but then it was obvious from the dinginess of their aspect that their feathers partook of the filth of that sooty atmosphere. Martins are by far the least agile of the four species; their wings and tails are short, and therefore they are not capable of such surprising turns and quick and glancing evolutions as the swallow. Accordingly they make use of a placid easy motion in a middle region of the air, seldom mounting to any great height, and never sweeping long together over the surface of the ground or water. They do not wander far for food, but affect sheltered districts, over some lake, or under some hanging wood, or in some hollow vale, especially in windy weather. They breed the latest of all the swallow kind: in 1772 they had nestlings on to *October* the twenty-first, and are never without unfledged young as late as *Michaelmas*.

As the summer declines the congregating flocks increase in numbers daily by the constant accession of the second broods: till at last they swarm in myriads upon myriads round the villages on the *Thames*, darkening the face of the sky as they frequent the aits of that river, where they roost. They retire, the bulk of them I mean, in vast flocks together about the beginning of *October:* but have appeared of late years in a considerable flight in this neighbourhood, for one day or two, as late as *November* the third and sixth, after they were supposed to have been gone for more than a fortnight. They therefore withdraw with us the latest of any species. Unless these birds are very short-lived indeed, or unless they do not return to the district where they are bred, they must undergo vast devastations

[1] [Virg., *Georg.*, iv., 249.]

some how, and some where; for the birds that return yearly bear no manner of proportion to the birds that retire.

House-martins are distinguished from their congeners by having their legs covered with soft downy feathers down to their toes. They are no songsters; but twitter in a pretty inward soft manner in their nests. During the time of breeding they are often greatly molested with fleas.

I am, &c.

LETTER XVII.

TO THE SAME.

Ringmer, near Lewes, Dec. 9, 1773.

DEAR SIR,

I RECEIVED your last favour just as I was setting out for this place; and am pleased to find that my monography met with your approbation. My remarks are the result of many years observation; and are, I trust, true in the whole: though I do not pretend to say that they are perfectly void of mistake, or that a more nice observer might not make many additions, since subjects of this kind are inexhaustible.

If you think my letter worthy the notice of your respectable society, you are at liberty to lay it before them; and they will consider it, I hope, as it was intended, as an humble attempt to promote a more minute inquiry into natural history; into the life and conversation of animals. Perhaps hereafter I may be induced to take the house-swallow under consideration; and from that proceed to the rest of the *British hirundines*.

Though I have now travelled the *Sussex-downs* upwards of thirty years, yet I still investigate that chain of majestic mountains with fresh admiration year by year; and think I see new beauties every time I traverse it. This range, which runs from *Chichester* eastward as far as *East-Bourn*, is about sixty miles in length, and is called *The South Downs*, properly speaking, only round *Lewes*. As you pass along you command a noble view of the wild, or weald, on one hand, and the broad downs and sea on the other. Mr. *Ray* used to visit a family[1] just at the foot of these hills, and was so ravished with the prospect from *Plumpton-*

[1] Mr. *Courthope* of *Danny*.

plain near *Lewes*, that he mentions those scapes in his "Wisdom of God in the Works of the Creation" with the utmost satisfaction, and thinks them equal to any thing he had seen in the finest parts of *Europe*.

For my own part, I think there is somewhat peculiarly sweet and amusing in the shapely figured aspect of chalk-hills in preference to those of stone, which are rugged, broken, abrupt, and shapeless.

Perhaps I may be singular in my opinion, and not so happy as to convey to you the same idea; but I never contemplate these mountains without thinking I perceive somewhat analogous to growth in their gentle swellings and smooth fungus-like protuberances, their fluted sides, and regular hollows and slopes, that carry at once the air of vegetative dilatation and expansion

- - - - - -

- - - Or was there ever a time when these immense masses of calcarious matter were thrown into fermentation by some adventitious moisture; were raised and leavened into such shapes by some plastic power; and so made to swell and heave their broad backs into the sky so much above the less animated clay of the wild below?[1]

By what I can guess from the admeasurements of the hills that have been taken round my house, I should suppose that these hills surmount the wild at an average at about the rate of five hundred feet.

One thing is very remarkable as to the sheep: from the westward till you get to the river *Adur* all the flocks have horns, and smooth white faces, and white legs; and a hornless sheep is rarely to be seen: but as soon as you pass that river eastward, and mount *Beeding-hill*, all the flocks at once become hornless, or, as they call them, poll-sheep; and have moreover black faces with a white tuft of wool on their foreheads, and speckled and spotted legs: so that you would think that the flocks of *Laban* were pasturing on one side of the stream, and the variegated breed of his son-in-law *Jacob* were cantoned along on the other. And this diversity holds good respectively on each side from the valley of *Bramber* and *Beeding* to the eastward, and westward all the whole length of the downs. If you talk with the shepherds on this subject, they tell you that the case has

[1] [*Wild* (see above) = *weald*. White had no suspicion that these Sussex downs might have been shaped by denudation.]

been so from time immemorial: and smile at your simplicity if you ask them whether the situation of these two different breeds might not be reversed? However, an intelligent friend of mine near *Chichester* is determined to try the experiment; and has this autumn, at the hazard of being laughed at, introduced a parcel of black-faced hornless rams among his horned western ewes. The black-faced poll-sheep have the shortest legs and the finest wool.

As I had hardly ever before travelled these downs at so late a season of the year, I was determined to keep as sharp a look-out as possible so near the southern coast, with respect to the summer short-winged birds of passage. We make great inquiries concerning the withdrawing of the swallow kind, without examining enough into the causes why *this tribe* is never to be seen in winter: for, *entre nous,* the disappearing of the latter is more marvellous than that of the former, and much more unaccountable. The *hirundines,* if they please, are certainly capable of migration; and yet no doubt are often found in a torpid state: but redstarts, nightingales, white-throats, black-caps, &c., &c., are very ill provided for long flights; have never been once found, as I ever heard of, in a torpid state, and yet can never be supposed, in such troops, from year to year to dodge and elude the eyes of the curious and inquisitive, which from day to day discern the other small birds that are known to abide our winters. But, notwithstanding all my care, I saw nothing like a summer bird of passage:[1] and, what is more strange, not one wheat-ear, though they abound so in the autumn as to be a considerable perquisite to the shepherds that take them; and though many are to be seen to my knowledge all the winter through in many parts of the south of *England.* The most intelligent shepherds tell me that some few of these birds appear on the downs in *March,* and then withdraw to breed probably in warrens and stone-quarries: now and then a nest is plowed up in a fallow on the downs under a furrow, but it is thought a rarity. At the time of wheat-harvest they begin to be taken in great numbers; are sent for sale in vast quantities to *Brighthelmstone* and *Tunbridge;* and appear at

[1] [White dates this letter December 9, but does not tell us the day on which he rode along the downs. If it was in December, the absence of the summer migrants is of course natural. For the wheatear, see note on Letter XXXIX. to Pennant; the statement below, at the end of this paragraph, that they are not taken west of the Arun, if it means that they are not *found,* is of course erroneous. Wheatears are common all along the south coast.]

the tables of all the gentry that entertain with any degree of elegance. About *Michaelmas* they retire and are seen no more till *March*. Though these birds are, when in season, in great plenty on the south downs round *Lewes*, yet at *East-Bourn*, which is the eastern extremity of those downs, they abound much more. One thing is very remarkable—that though in the height of the season so many hundreds of dozens are taken, yet they never are seen to flock; and it is a rare thing to see more than three or four at a time: so that there must be a perpetual flitting and constant progressive succession. It does not appear that any wheat-ears are taken to the westward of *Houghton-bridge*, which stands on the river *Arun*.

I did not fail to look particularly after my new migration of *ring-ousels;* and to take notice whether they continued on the downs to this season of the year; as I had formerly remarked them in the month of *October* all the way from *Chichester* to *Lewes* wherever there were any shrubs and covert: but not one bird of this sort came within my observation. I only saw a few *larks* and *whin-chats*, some *rooks*, and several *kites* and *buzzards*.

About *Midsummer* a flight of *cross-bills* comes to the pine-groves about this house,[1] but never makes any long stay.

The old tortoise, that I have mentioned in a former letter, still continues in this garden; and retired under ground about the twentieth of *November*, and came out again for one day on the thirtieth: it lies now buried in a wet swampy border under a wall facing to the south, and is enveloped at present in mud and mire!

Here is a large rookery round this house, the inhabitants of which seem to get their livelihood very easily; for they spend the greatest part of the day on their nest-trees when the weather is mild. These rooks retire every evening all the winter from this rookery, where they only call by the way, as they are going to roost in deep woods: at the dawn of day they always revisit their nest-trees, and are preceded a few minutes by a flight of daws, that act, as it were, as their harbingers.

I am, &c.

[1] [It is to be noted that White dates this letter from Ringmer in Sussex, not from Selborne.]

LETTER XVIII.

TO THE SAME.

Selborne, Jan. 29, 1774.

DEAR SIR,

THE house-swallow, or chimney-swallow, is undoubtedly the first comer of all the *British hirundines;* and appears in general on or about the thirteenth of *April,* as I have remarked from many years observation. Not but now and then a straggler is seen much earlier: and, in particular, when I was a boy I observed a swallow for a whole day together on a sunny warm *Shrove Tuesday;* which day could not fall out later than the middle of *March,* and often happened early in *February.*

It is worth remarking that these birds are seen first about lakes and mill-ponds; and it is also very particular, that if these early visitors happen to find frost and snow, as was the case of the two dreadful springs of 1770 and 1771, they immediately withdraw for a time. A circumstance this much more in favour of hiding than migration; since it is much more probable that a bird should retire to it's hybernaculum just at hand, than return for a week or two only to warmer latitudes.

The swallow, though called the chimney-swallow, by no means builds together in chimnies, but often within barns and out-houses against the rafters; and so she did in *Virgil*'s time:

"— — — — Antè
"Garrula quàm tignis nidos suspendat hirundo." [1]

In *Sweden* she builds in barns, and is called *ladu swala,* the barn-swallow. Besides, in the warmer parts of *Europe* there are no chimnies to houses, except they are *English-built:* in these countries she constructs her nest in porches, and gate-ways, and galleries, and open halls.

Here and there a bird may affect some odd, peculiar place; as we have known a swallow build down the shaft of an old well, through which chalk had been formerly drawn up for the purpose of manure: but in general with us this *hirundo* breeds in chimnies; and loves to haunt those stacks where there is a constant fire, no doubt for the sake of warmth. Not that it can

[1] [Virg., *Georg.*, iv., 307.]

subsist in the immediate shaft where there is a fire; but prefers one adjoining to that of the kitchen, and disregards the perpetual smoke of that funnel, as I have often observed with some degree of wonder.

Five or six or more feet down the chimney does this little bird begin to form her nest about the middle of *May*, which consists, like that of the house-martin, of a crust or shell composed of dirt or mud, mixed with short pieces of straw to render it tough and permanent; with this difference, that whereas the shell of the martin is nearly hemispheric, that of the swallow is open at the top, and like half a deep dish: this nest is lined with fine grasses, and feathers which are often collected as they float in the air.

Wonderful is the address which this adroit bird shews all day long in ascending and descending with security through so narrow a pass. When hovering over the mouth of the funnel, the vibrations of her wings acting on the confined air occasion a rumbling like thunder. It is not improbable that the dam submits to this inconvenient situation so low in the shaft, in order to secure her broods from rapacious birds, and particularly from owls, which frequently fall down chimnies, perhaps in attempting to get at these nestlings.

The swallow lays from four to six white eggs, dotted with red specks; and brings out her first brood about the last week in *June*, or the first week in *July*. The progressive method by which the young are introduced into life is very amusing: first, they emerge from the shaft with difficulty enough, and often fall down into the rooms below: for a day or so they are fed on the chimney-top, and then are conducted to the dead leafless bough of some tree, where, sitting in a row, they are attended with great assiduity, and may then be called *perchers*. In a day or two more they become *flyers*, but are still unable to take their own food; therefore they play about near the place where the dams are hawking for flies; and, when a mouthful is collected, at a certain signal given, the dam and the nestling advance, rising towards each other, and meeting at an angle; the young one all the while uttering such a little quick note of gratitude and complacency, that a person must have paid very little regard to the wonders of Nature that has not often remarked this feat.

The dam betakes herself immediately to the business of a second brood as soon as she is disengaged from her first; which at once associates with the first broods of *house-martins;* and with them

congregates, clustering on sunny roofs, towers, and trees. This hirundo brings out her second brood towards the middle and end of *August.*

All the summer long is the swallow a most instructive pattern of unwearied industry and affection; for, from morning to night, while there is a family to be supported, she spends the whole day in skimming close to the ground, and exerting the most sudden turns and quick evolutions. Avenues, and long walks under hedges, and pasture-fields, and mown meadows where cattle graze, are her delight, especially if there are trees interspersed; because in such spots insects most abound. When a fly is taken a smart snap from her bill is heard, resembling the noise at the shutting of a watch-case; but the motion of the mandibles are too quick for the eye.

The swallow, probably the male bird, is the *excubitor* to house-martins, and other little birds, announcing the approach of birds of prey. For as soon as an hawk appears, with a shrill alarming note he calls all the swallows and martins about him; who pursue in a body, and buffet and strike their enemy till they have driven him from the village, darting down from above on his back, and rising in a perpendicular line in perfect security. This bird also will sound the alarm, and strike at cats when they climb on the roofs of houses, or otherwise approach the nests. Each species of hirundo drinks as it flies along, sipping the surface of the water; but the swallow alone, in general, *washes* on the wing, by dropping into a pool for many times together: in very hot weather house-martins and bank-martins dip and wash a little.

The swallow is a delicate songster, and in soft sunny weather sings both perching and flying; on trees in a kind of concert, and on chimney tops: is also a bold flyer, ranging to distant downs and commons even in windy weather, which the other species seem much to dislike; nay, even frequenting exposed sea-port towns, and making little excursions over the salt water. Horse-men on wide downs are often closely attended by a little party of swallows for miles together, which plays before and behind them, sweeping around, and collecting all the sculking insects that are roused by the trampling of the horses' feet: when the wind blows hard, without this expedient, they are often forced to settle to pick up their lurking prey.

This species feeds much on little *coleoptera,* as well as on gnats and flies; and often settles on dug ground, or paths, for gravels to grind and digest it's food. Before they depart, for some weeks,

to a bird, they forsake houses and chimnies, and roost in trees; and usually withdraw about the beginning of *October;* though some few stragglers may appear on at times till the first week in *November.*

Some few pairs haunt the new and open streets of *London* next the fields, but do not enter, like the house-martin, the close and crowded parts of the city.

Both male and female are distinguished from their congeners by the length and forkedness of their tails. They are undoubtedly the most nimble of all the species: and when the male pursues the female in amorous chase, they then go beyond their usual speed, and exert a rapidity almost too quick for the eye to follow.

After this circumstantial detail of the life and discerning στοργη of the swallow, I shall add, for your farther amusement, an anecdote or two not much in favour of her sagacity:—

A certain swallow built for two years together on the handles of a pair of garden-shears, that were stuck up against the boards in an out-house, and therefore must have her nest spoiled whenever that implement was wanted: and, what is stranger still, another bird of the same species built it's nest on the wings and body of an owl that happened by accident to hang dead and dry from the rafter of a barn. This owl, with the nest on it's wings, and with eggs in the nest, was brought as a curiosity worthy the most elegant private museum in *Great-Britain.* The owner, struck with the oddity of the sight, furnished the bringer with a large shell, or conch, desiring him to fix it just where the owl hung: the person did as he was ordered, and the following year a pair, probably the same pair, built their nest in the conch, and laid their eggs.

The owl and the conch make a strange grotesque appearance, and are not the least curious specimens in that wonderful collection of art and nature.[1]

Thus is instinct in animals, taken the least out of it's way, an undistinguishing, limited faculty; and blind to every circumstance that does not immediately respect self-preservation, or lead at once to the propagation or support of their species.

I am,
With all respect, &c. &c.

[1] Sir *Ashton Lever's* Musæum.

LETTER XIX.

TO THE SAME.

Selborne, Feb. 14, 1774.

DEAR SIR,

I RECEIVED your favour of the eighth, and am pleased to find that you read my little history of the swallow with your usual candour: nor was I the less pleased to find that you made objections where you saw reason.

As to the quotations, it is difficult to say precisely which species of hirundo *Virgil* might intend in the lines in question, since the ancients did not attend to specific differences like modern naturalists: yet somewhat may be gathered, enough to incline me to suppose that in the two passages quoted the poet had his eye on the swallow.

In the first place the epithet *garrula* suits the *swallow* well, who is a great songster; and not the *martin*, which is rather a mute bird; and when it sings is so inward as scarce to be heard. Besides, if *tignum* in that place signifies a *rafter* rather than a *beam*, as it seems to me to do, then I think it must be the *swallow* that is alluded to, and not the *martin*; since the former does frequently build *within the roof* against the *rafters*; while the latter always, as far as I have been able to observe, builds *without the roof* against eaves and cornices.

As to the *simile*, too much stress must not be laid on it: yet the epithet *nigra* speaks plainly in favour of the swallow, whose back and wings are very black; while the rump of the martin is milk-white, it's back and wings blue, and all it's under part white as snow. Nor can the clumsy motions (comparatively clumsy) of the martin well represent the sudden and artful evolutions and quick turns which *Juturna* gave to her brother's chariot, so as to elude the eager pursuit of the enraged *Æneas*. The verb *sonat* also seems to imply a bird that is somewhat loquacious.[1]

[1] "*Nigra* velut magnas domini cum divitis ædes
"Pervolat, et pennis alta atria lustrat hirundo,
"Pabula parva legens, nidisque loquacibus escas:
"Et nunc porticibus vacuis, nunc humida circum
"Stagna *sonat*." *

*[*Æn.*, xii., 473-477.]

We have had a very wet autumn and winter, so as to raise the springs to a pitch beyond any thing since 1764; which was a remarkable year for floods and high waters. The land-springs, which we call *lavants*, break out much on the downs of *Sussex*, *Hampshire*, and *Wiltshire*. The country people say when the *lavants* rise corn will always be dear; meaning that when the earth is so glutted with water as to send forth springs on the downs and uplands, that the corn-vales must be drowned: and so it has proved for these ten or eleven years past. For land-springs have never obtained more since the memory of man than during that period; nor has there been known a greater scarcity of all sorts of grain, considering the great improvements of modern husbandry. Such a run of wet seasons a century or two ago would, I am persuaded, have occasioned a famine. Therefore pamphlets and newspaper letters, that talk of combinations, tend to inflame and mislead; since we must not expect plenty till Providence sends us more favourable seasons.

The wheat of last year, all round this district, and in the county of *Rutland*, and elsewhere, yields remarkably bad: and our wheat on the ground, by the continual late sudden vicissitudes from fierce frosts to pouring rains, looks poorly; and the turnips rot very fast.

I am, &c.

LETTER XX.

TO THE SAME.

Selborne, Feb. 26, 1774.

Dear Sir,

The sand-martin, or bank-martin, is by much the least of any of the *British hirundines;* and, as far as we have ever seen, the smallest known hirundo: though *Brisson* asserts that there is one much smaller, and that is the *hirundo esculenta*.

But it is much to be regretted that it is scarce possible for any observer to be so full and exact as he could wish in reciting the circumstances attending the life and conversation of this little bird, since it is *fera naturâ*, at least in this part of the kingdom, disclaiming all domestic attachments, and haunting wild heaths and commons where there are large lakes: while the other species, especially the swallow and house-martin, are remarkably

gentle and domesticated, and never seem to think themselves safe but under the protection of man.

Here are in this parish, in the sand-pits and banks of the lakes of *Wolmer-forest,* several colonies of these birds; and yet they are never seen in the village; nor do they at all frequent the cottages that are scattered about in that wild district. The only instance I ever remember where this species haunts any building is at the town of *Bishop's Waltham,* in this county, where many sand-martins nestle and breed in the scaffold-holes of the back-wall of *William* of *Wykeham's* stables: but then this wall stands in a very sequestered and retired enclosure, and faces upon a large and beautiful lake. And indeed this species seems so to delight in large waters, that no instance occurs of their abounding, but near vast pools or rivers: and in particular it has been remarked that they swarm in the banks of the *Thames* in some places below *London-bridge.*

It is curious to observe with what different degrees of architectonic skill Providence has endowed birds of the same genus, and so nearly correspondent in their general mode of life! for while the swallow and the house-martin discover the greatest address in raising and securely fixing crusts or shells of loam as cunabula for their young, the bank-martin terebrates a round and regular hole in the sand or earth, which is serpentine, horizontal, and about two feet deep. At the inner end of this burrow does this bird deposit, in a good degree of safety, her rude nest, consisting of fine grasses and feathers, usually goose-feathers, very inartificially laid together.

Perseverance will accomplish anything: though at first one would be disinclined to believe that this weak bird, with her soft and tender bill and claws, should ever be able to bore the stubborn sand-bank without entirely disabling herself: yet with these feeble instruments have I seen a pair of them make great dispatch: and could remark how much they had scooped that day by the fresh sand which ran down the bank, and was of a different colour from that which lay loose and bleached in the sun.

In what space of time these little artists are able to mine and finish these cavities I have never been able to discover, for reasons given above; but it would be a matter worthy of observation, where it falls in the way of any naturalist to make his remarks. This I have often taken notice of, that several holes of different depths are left unfinished at the end of summer. To

imagine that these beginnings were intentionally made in order to be in the greater forwardness for next spring, is allowing perhaps too much foresight and *rerum prudentia* to a simple bird. May not the cause of these *latebræ* being left unfinished arise from their meeting in those places with strata too harsh, hard, and solid, for their purpose, which they relinquish, and go to a fresh spot that works more freely? Or may they not in other places fall in with a soil as much too loose and mouldering, liable to flounder, and threatening to overwhelm them and their labours?

One thing is remarkable—that, after some years, the old holes are forsaken and new ones bored; perhaps because the old habitations grow foul and fetid from long use, or because they may so abound with fleas as to become untenantable. This species of swallow moreover is strangely annoyed with fleas: and we have seen fleas, bed-fleas (*pulex irritans*), swarming at the mouths of these holes, like bees on the stools of their hives.[1]

The following circumstance should by no means be omitted—that these birds do *not* make use of their caverns by way of hybernacula, as might be expected; since banks so perforated have been dug out with care in the winter, when nothing was found but empty nests.

The sand-martin arrives much about the same time with the swallow, and lays, as she does, from four to six white eggs. But as this species is *cryptogame*, carrying on the business of nidification, incubation, and the support of it's young in the dark, it would not be so easy to ascertain the time of breeding, were it not for the coming forth of the broods, which appear much about the time, or rather somewhat earlier than those of the swallow. The nestlings are supported in common like those of their congeners, with gnats and other small insects; and sometimes they are fed with *libellulæ* (dragon-flies) almost as long as themselves. In the last week in *June* we have seen a row of these sitting on a rail near a great pool as *perchers;* and so young and helpless, as easily to be taken by hand: but whether the dams ever feed them on the wing, as swallows and house-martins do, we have never yet been able to determine; nor do we know whether they pursue and attack birds of prey.

When they happen to breed near hedges and enclosures, they

[1] [The flea of the sand-martin is distinct, not only from the bed-flea, but from the flea of the swallow.]

are dispossessed of their breeding holes by the house-sparrow, which is on the same account a fell adversary to house-martins.

These *hirundines* are no songsters, but rather mute, making only a little harsh noise when a person approaches their nests. They seem not to be of a sociable turn, never with us congregating with their congeners in the autumn. Undoubtedly they breed a second time, like the house-martin and swallow; and withdraw about *Michaelmas.*

Though in some particular districts they may happen to abound, yet in the whole, in the south of *England* at least, is this much the rarest species. For there are few towns or large villages but what abound with house-martins; few churches, towers, or steeples, but what are haunted by some swifts; scarce a hamlet or single cottage-chimney that has not its swallow; while the bank-martins, scattered here and there, live a sequestered life among some abrupt sand-hills, and in the banks of some few rivers.

These birds have a peculiar manner of flying; flitting about with odd jerks, and vacillations, not unlike the motions of a butterfly. Doubtless the flight of all *hirundines* is influenced by, and adapted to, the peculiar sort of insects which furnish their food. Hence it would be worth inquiry to examine what particular genus of insects affords the principal food of each respective species of swallow.

Notwithstanding what has been advanced above, some few sand-martins, I see, haunt the skirts of *London,* frequenting the dirty pools in *Saint George's-Fields,* and about *White-Chapel.* The question is where these build, since there are no banks or bold shores in that neighbourhood: perhaps they nestle in the scaffold holes of some old or new deserted building. They dip and wash as they fly sometimes, like the house-martin and swallow.

Sand-martins differ from their congeners in the diminutiveness of their size, and in their colour, which is what is usually called a mouse-colour. Near *Valencia,* in *Spain,* they are taken, says *Willughby,* and sold in the markets for the table; and are called by the country people, probably from their desultory jerking manner of flight, *Papilion de Montagna.*

LETTER XXI.

TO THE SAME.

Selborne, Sept. 28, 1774.

DEAR SIR,

As the *swift* or *black-martin* is the largest of the *British hirundines*,[1] so is it undoubtedly the latest comer. For I remember but one instance of it's appearing before the last week in *April:* and in some of our late frosty, harsh springs, it has not been seen till the beginning of *May*. This species usually arrives in pairs.

The swift, like the sand-martin, is very defective in architecture, making no crust, or shell, for it's nest; but forming it of dry grasses and feathers, very rudely and inartificially put together. With all my attention to these birds, I have never been able once to discover one in the act of collecting or carrying in materials: so that I have suspected (since their nests are exactly the same) that they sometimes usurp upon the house-sparrows, and expel them, as sparrows do the house and sand-martin; well remembering that I have seen them squabbling together at the entrance of their holes; and the sparrows up in arms, and much disconcerted at these intruders. And yet I am assured, by a nice observer in such matters, that they do collect feathers for their nests in *Andalusia;* and that he has shot them with such materials in their mouths.[2]

Swifts, like sand-martins, carry on the business of nidification quite in the dark, in crannies of castles, and towers, and steeples, and upon the tops of the walls of churches under the roof; and therefore cannot be so narrowly watched as those species that build more openly: but, from what I could ever observe, they begin nesting about the middle of *May;* and I have remarked, from eggs taken, that they have sat hard by the ninth of *June*. In general they haunt tall buildings, churches, and steeples, and breed only in such: yet in this village some pairs frequent the lowest and meanest cottages, and educate their young under those

[1] [The swift (*Cypselus apus*, L.) is now included with the woodpeckers, bee-eaters, etc., in the order *Picariæ*, and is removed far away from the *Hirundinidæ*. White notes in this letter several of the points of difference between the two European swifts and the *Hirundinidæ*, which they superficially resemble, and also mentions Scopoli's proposal to place them in a genus by themselves; but he naturally accepted the Linnean classification. He never interfered in matters which demanded a wider knowledge than his own.]

[2] [His brother, John White, then chaplain at Gibraltar.]

thatched roofs. We remember but one instance where they breed out of buildings; and that is in the sides of a deep chalkpit near the town of *Odiham*, in this county, where we have seen many pairs entering the crevices, and skimming and squeaking round the precipices.

As I have regarded these amusive birds with no small attention, if I should advance something new and peculiar with respect to them, and different from all other birds, I might perhaps be credited; especially as my assertion is the result of many years exact observation. The fact that I would advance is, that swifts *tread*, or copulate, on the wing: and I would wish any nice observer, that is startled at this supposition, to use his own eyes, and I think he will soon be convinced. In another *class* of animals, *viz.* the *insect*, nothing is so common as to see the different species of many genera in conjunction as they fly. The swift is almost continually on the wing; and as it never settles on the ground, on trees, or roofs, would seldom find opportunity for amorous rites, was it not enabled to indulge them in the air. If any person would watch these birds of a fine morning in *May*, as they are sailing round at a great height from the ground, he would see, every now and then, one drop on the back of another, and both of them sink down together for many fathoms with a loud piercing shriek. This I take to be the juncture when the business of generation is carrying on.

As the swift eats, drinks, collects materials for it's nest, and, as it seems, propagates on the wing; it appears to live more in the air than any other bird, and to perform all functions there save those of sleeping and incubation.

This *hirundo* differs widely from it's congeners in laying invariably but *two* eggs at a time, which are milk-white, long, and peaked at the small end; whereas the other species lay at each brood from *four* to *six*. It is a most alert bird, rising very early, and retiring to roost very late; and is on the wing in the height of summer at least sixteen hours. In the longest days it does not withdraw to rest till a quarter before nine in the evening, being the latest of all day birds. Just before they retire whole groups of them assemble high in the air, and squeak, and shoot about with wonderful rapidity. But this bird is never so much alive as in sultry thundry weather, when it expresses great alacrity, and calls forth all it's powers. In hot mornings several, getting together in little parties, dash round the steeples and churches, squeaking as they go in a very clamorous manner: these, by nice

observers, are supposed to be males, serenading their sitting hens; and not without reason, since they seldom squeak till they come close to the walls or eaves, and since those within utter at the same time a little inward note of complacency.

When the hen has sat hard all day, she rushes forth just as it is almost dark, and stretches and relieves her weary limbs, and snatches a scanty meal for a few minutes, and then returns to her duty of incubation. Swifts, when wantonly and cruelly shot while they have young, discover a little lump of insects in their mouths, which they pouch and hold under their tongue. In general they feed in a much higher district than the other species; a proof that gnats and other insects do also abound to a considerable height in the air: they also range to vast distances; since loco-motion is no labour to them, who are endowed with such wonderful powers of wing. Their powers seem to be in proportion to their leavers; and their wings are longer in proportion than those of almost any other bird. When they mute, or ease themselves in flight, they raise their wings, and make them meet over their backs.

At some certain times in the summer I had remarked that swifts were hawking very low for hours together over pools and streams; and could not help inquiring into the object of their pursuit that induced them to descend so much below their usual range. After some trouble, I found that they were taking *phryganeæ*, *ephemeræ*, and *libellulæ* (cadew-flies, may-flies, and dragon-flies) that were just emerged out of their aurelia state. I then no longer wondered that they should be so willing to stoop for a prey that afforded them such plentiful and succulent nourishment.

They bring out their young about the middle or latter end of *July*: but as these never become perchers, nor, that ever I could discern, are fed on the wing by their dams, the coming forth of the young is not so notorious as in the other species.

On the thirtieth of last *June* I untiled the eaves of an house[1] where many pairs build, and found in each nest only *two* squab naked *pulli*: on the eighth of *July* I repeated the same inquiry, and found they had made very little progress towards a fledged state, but were still naked and helpless. From whence we may conclude that birds whose way of life keeps them perpetually on the wing would not be able to quit their nest till the end of the month. Swallows and martins, that have numerous families, are

[1] [His brother Henry's house at Fyfield. See Letter to John White, July 15, 1774 (Bell's ed., vol. ii., p. 33).]

continually feeding them every two or three minutes; while swifts, that have but two young to maintain, are much at their leisure, and do not attend on their nests for hours together.

Sometimes they pursue and strike at hawks that come in their way; but not with that vehemence and fury that swallows express on the same occasion. They are out all day long in wet days, feeding about, and disregarding still rain: from whence two things may be gathered; first, that many insects abide high in the air, even in rain; and next, that the feathers of these birds must be well preened to resist so much wet. Windy, and particularly windy weather with heavy showers, they dislike; and on such days withdraw, and are scarce ever seen.

There is a circumstance respecting the *colour* of swifts, which seems not to be unworthy our attention. When they arrive in the spring they are all over of a glossy, dark soot-colour, except their chins, which are white; but, by being all day long in the sun and air, they become quite weather-beaten and bleached before they depart, and yet they return glossy again in the spring. Now, if they pursue the sun into lower latitudes, as some suppose, in order to enjoy a perpetual summer, why do they not return bleached? Do they not rather perhaps retire to rest for a season, and at that juncture moult and change their feathers, since all other birds are known to moult soon after the season of breeding?[1]

Swifts are very anomalous in many particulars, dissenting from all their congeners not only in the number of their young, but in breeding but *once* in a summer; whereas all the other *British hirundines* breed invariably *twice*. It is past all doubt that swifts can breed but once, since they withdraw in a short time after the flight of their young, and some time before their congeners bring out their second brood. We may here remark, that, as swifts breed but *once* in a summer, and only *two* at a time, and the other *hirundines twice*, the latter, who lay from four to six eggs, increase at an average five times as fast as the former.

But in nothing are swifts more singular than in their early retreat. They retire, as to the main body of them, by the tenth of *August*, and sometimes a few days sooner: and every straggler invariably withdraws by the twentieth, while their congeners, all of them, stay till the beginning of *October;* many of them all

[1] [The swift, like the swallow, moults *after* it leaves us. The "bleaching" of the feathers here alluded to, is not so much the result of the sun's heat, as of the wear and tear of constant rapid flight. The edges of the feathers become worn, and lose their glossy appearance.]

through that month, and some occasionally to the beginning of *November*. This early retreat is mysterious and wonderful, since that time is often the sweetest season in the year. But, what is more extraordinary, they begin to retire still earlier in the most southerly parts of *Andalusia*, where they can be no ways influenced by any defect of heat; or, as one might suppose, defect of food.[1] Are they regulated in their motions with us by a failure of food, or by a propensity to moulting, or by a disposition to rest after so rapid a life, or by what? This is one of those incidents in natural history that not only baffles our searches, but almost eludes our guesses!

These hirundines never perch on trees or roofs, and so never congregate with their congeners. They are fearless while haunting their nesting places, and are not to be scared with a gun; and are often beaten down with poles and cudgels as they stoop to go under the eaves. Swifts are much infested with those pests to the genus called *hippoboscæ hirundinis;* and often wriggle and scratch themselves, in their flight, to get rid of that clinging annoyance.

Swifts are no songsters, and have only one harsh screaming note; yet there are ears to which it is not displeasing, from an agreeable association of ideas, since that note never occurs but in the most lovely summer weather.

They never settle on the ground but through accident; and when down can hardly rise, on account of the shortness of their legs and the length of their wings: neither can they walk, but only crawl; but they have a strong grasp with their feet, by which they cling to walls. Their bodies being flat they can enter a very narrow crevice; and where they cannot pass on their bellies they will turn up edgewise.

The particular formation of the foot discriminates the swift from all the *British hirundines;* and indeed from all other known birds, the *hirundo melba*, or great white-bellied swift of *Gibraltar*, excepted; for it is so disposed as to carry "*omnes quatuor digitos anticos*" all it's four toes forward; besides the least toe, which should be the back-toe, consists of one bone alone, and the other three only of two apiece. A construction most rare and peculiar, but nicely adapted to the purposes in which their feet are em-

[1] [This observation of John White, chaplain at Gibraltar, is hardly confirmed by Col. Irby, who says that the majority of the swifts leave by the end of August, some staying on till the middle of September (*Ornithology of the Straits of Gibraltar*, p. 122).]

ployed. This, and some peculiarities attending the nostrils and under mandible, have induced a discerning [1] naturalist to suppose that this *species* might constitute a *genus per se.*

In *London* a party of swifts frequents the *Tower,* playing and feeding over the river just below the bridge: others haunt some of the churches of the *Borough* next the fields; but do not venture, like the *house-martin,* into the close crowded part of the town.

The *Swedes* have bestowed a very pertinent name on this swallow, calling it *ring swala,* from the perpetual *rings* or circles that it takes round the scene of it's nidification.

Swifts feed on *coleoptera,* or small beetles with hard cases over their wings, as well as on the softer insects; but it does not appear how they can procure gravel to grind their food, as swallows do, since they never settle on the ground. Young ones, over-run with *hippoboscæ,* are sometimes found, under their nests, fallen to the ground: the number of vermin rendering their abode insupportable any longer. They frequent in this village several abject cottages; yet a succession still haunts the same unlikely roofs: a good proof this that the same birds return to the same spots. As they must stoop very low to get up under these humble eaves, cats lie in wait, and sometimes catch them on the wing.

On the fifth of *July,* 1775, I again untiled part of a roof over the nest of a swift. The dam sat in the nest; but so strongly was she affected by natural *στοργη* for her brood, which she supposed to be in danger, that, regardless of her own safety, she would not stir, but lay sullenly by them, permitting herself to be taken in hand. The squab young we brought down and placed on the grass-plot, where they tumbled about, and were as helpless as a new-born child. While we contemplated their naked bodies, their unwieldy disproportioned abdomina, and their heads, too heavy for their necks to support, we could not but wonder when we reflected that these shiftless beings in a little more than a fortnight would be able to dash through the air almost with the inconceivable swiftness of a meteor; and perhaps, in their emigration, must traverse vast continents and oceans as distant as the equator. So soon does Nature advance small birds to their *ἡλικια,* or state of perfection; while the progressive growth of men and large quadrupeds is slow and tedious!

I am, &c.

[1] John Antony Scopoli, of Carniola, M.D.

LETTER XXII.

TO THE SAME.

Selborne, Sept. 13, 1774.

DEAR SIR,

BY means of a straight cottage-chimney I had an opportunity this summer of remarking, at my leisure, how swallows ascend and descend through the shaft: but my pleasure, in contemplating the address with which this feat was performed to a considerable depth in the chimney, was somewhat interrupted by apprehensions lest my eyes might undergo the same fate with those of *Tobit*.[1]

Perhaps it may be some amusement to you to hear at what times the different species of hirundines arrived this spring in three very distant counties of this kingdom. With us the swallow was seen first on *April* the 4th, the swift on *April* the 24th, the bank-martin on *April* the 12th, and the house-martin not till *April* the 30th. At *South Zele, Devonshire,* swallows did not arrive till *April* the 25th; swifts, in plenty, on *May* the 1st; and house-martins not till the middle of *May*. At *Blackburn*, in *Lancashire,* swifts were seen *April* the 28th, swallows *April* the 29th, house-martins *May* the 1st. Do these different dates, in such distant districts, prove any thing for or against migration?

A farmer, near *Weyhill,* fallows his land with two teams of asses; one of which works till noon, and the other in the afternoon. When these animals have done their work, they are penned all night, like sheep, on the fallow. In the winter they are confined and foddered in a yard, and make plenty of dung.

Linnæus says that hawks "*paciscuntur inducias cum avibus, quamdiu cuculus cuculat*":[2] but it appears to me that, during that period, many little birds are taken and destroyed by birds of prey, as may be seen by their feathers left in lanes and under hedges.

The *missel-thrush* is, while breeding, fierce and pugnacious, driving such birds as approach it's nest, with great fury, to a

[1] Tobit, ii. 10.

[2] [This curious statement of Linnæus that hawks "make a truce with small birds as long as the cuckoo's voice is heard" may possibly have its origin in Aristotle, who, while combating the vulgar notion that the cuckoo changes into a hawk, admits that few hawks can be seen during the time when the cuckoo is singing (*Hist. Anim.*, Bk. vi., p. 7). This may be explained by the spring migration of hawks northward in the east of Europe.]

distance. The *Welch* call it *pen y llwyn*, the head or master of the coppice. He suffers no magpie, jay, or blackbird, to enter the garden where he haunts; and is, for the time, a good guard to the new-sown legumens. In general he is very successful in the defence of his family: but once I observed in my garden, that several magpies came determined to storm the nest of a missel-thrush: the dams defended their mansion with great vigour, and fought resolutely *pro aris & focis;* but numbers at last prevailed, they tore the nest to pieces, and swallowed the young alive.

In the season of nidification the wildest birds are comparatively tame. Thus the *ring-dove* breeds in my fields, though they are continually frequented; and the missel-thrush, though most shy and wild in the autumn and winter, builds in my garden close to a walk where people are passing all day long.[1]

Wall-fruit abounds with me this year; but my grapes, that used to be forward and good, are at present backward beyond all precedent: and this is not the worst of the story; for the same ungenial weather, the same black cold solstice, has injured the more necessary fruits of the earth, and discoloured and blighted our wheat. The crop of hops promises to be very large.

Frequent returns of deafness incommode me sadly, and half disqualify me for a naturalist; for, when those fits are upon me, I lose all the pleasing notices and little intimations arising from rural sounds; and *May* is to me as silent and mute with respect to the notes of birds, &c. as *August.* My eyesight is, thank God, quick and good; but with respect to the other sense, I am, at times, disabled:

> "And Wisdom at one entrance quite shut out."[2]

[1] [Bell notes on this passage that these two species still keep up their familiarity with the same spots. The ringdove builds in the grounds near the house, and the missel-thrush "has its nest every year in the spot indicated in the text". (As I write this note, a missel-thrush is building in an apple-tree close to my garden-walk, and not twenty yards from the house.)]

[2] [*Paradise Lost*, iii., 50.]

LETTER XXIII.

TO THE SAME.

Selborne, June 8, 1775.

DEAR SIR,

ON *September* the 21st, 1741, being then on a visit, and intent on field-diversions, I rose before daybreak: when I came into the enclosures, I found the stubbles and clover-grounds matted all over with a thick coat of cobweb, in the meshes of which a copious and heavy dew hung so plentifully that the whole face of the country seemed, as it were, covered with two or three setting-nets drawn one over another. When the dogs attempted to hunt, their eyes were so blinded and hoodwinked that they could not proceed, but were obliged to lie down and scrape the incumbrances from their faces with their fore-feet, so that, finding my sport interrupted, I returned home musing in my mind on the oddness of the occurrence.

As the morning advanced the sun became bright and warm, and the day turned out one of those most lovely ones which no season but the autumn produces; cloudless, calm, serene, and worthy of the South of *France* itself.

About nine an appearance very unusual began to demand our attention, a shower of cobwebs falling from very elevated regions, and continuing, without any interruption, till the close of the day. These webs were not single filmy threads, floating in the air in all directions, but perfect flakes or rags; some near an inch broad, and five or six long, which fell with a degree of velocity which shewed they were considerably heavier than the atmosphere.

On every side as the observer turned his eyes might he behold a continual succession of fresh flakes falling into his sight, and twinkling like stars as they turned their sides towards the sun.

How far this wonderful shower extended would be difficult to say; but we know that it reached *Bradley*, *Selborne*, and *Alresford*, three places which lie in a sort of a triangle, the shortest of whose sides is about eight miles in extent.

At the second of those places there was a gentleman (for whose veracity and intelligent turn we have the greatest veneration) who observed it the moment he got abroad; but concluded that, as soon as he came upon the hill above his house, where he took his morning rides, he should be higher than this meteor, which he imagined might have been blown, like *Thistle-down*, from the

common above: but, to his great astonishment, when he rode to the most elevated part of the down, 300 feet above his fields, he found the webs in appearance still as much above him as before; still descending into sight in a constant succession, and twinkling in the sun, so as to draw the attention of the most incurious.

Neither before nor after was any such fall observed; but on this day the flakes hung in the trees and hedges so thick, that a diligent person sent out might have gathered baskets full.

The remark that I shall make on these cobweb-like appearances, called *gossamer*, is, that, strange and superstitious as the notions about them were formerly, nobody in these days doubts but that they are the real production of small spiders, which swarm in the fields in fine weather in autumn, and have a power of shooting out webs from their tails so as to render themselves buoyant, and lighter than air. But why these apterous insects should *that day* take such a wonderful aërial excursion, and why their webs should at once become so gross and material as to be considerably more weighty than air, and to descend with precipitation, is a matter beyond my skill. If I might be allowed to hazard a supposition, I should imagine that those filmy threads, when first shot, might be entangled in the rising dew, and so drawn up, spiders and all, by a brisk evaporation into the region where clouds are formed: and if the spiders have a power of coiling and thickening their webs in the air, as Dr. *Lister* says they have [see his Letters to Mr. *Ray*] then, when they were become heavier than the air, they must fall.

Every day in fine weather, in autumn chiefly, do I see those spiders shooting out their webs and mounting aloft: they will go off from your finger if you will take them into your hand. Last summer one alighted on my book as I was reading in the parlour; and, running to the top of the page, and shooting out a web, took it's departure from thence. But what I most wondered at was, that it went off with considerable velocity in a place where no air was stirring; and I am sure that I did not assist it with my breath. So that these little crawlers seem to have, while mounting, some loco-motive power without the use of wings, and to move in the air faster than the air itself.[1]

[1] [Since White's time the curious subject of gossamer has been investigated by Blackwall (*Linn. Trans.*, xv., and *British Spiders*). Dr. Lincecum's account of the gossamer spider of Texas (*Amer. Nat.*, viii.) and Darwin's *Naturalist's Voyage*, chap. viii., may also be read with advantage. White's excellent description needs no comment, except that his supposition that the filmy threads "might be entangled in the rising dew" is quite impossible. His physical notions were evidently taken from Hales' *Statical Essays*.]

LETTER XXIV.

TO THE SAME.

Selborne, Aug. 15, 1775.

DEAR SIR,

THERE is a wonderful spirit of sociality in the brute creation, independent of sexual attachment: the congregating of gregarious birds in the winter is a remarkable instance.[1]

Many horses, though quiet with company, will not stay one minute in a field by themselves: the strongest fences cannot restrain them. My neighbour's horse will not only not stay by himself abroad, but he will not bear to be left alone in a strange stable without discovering the utmost impatience, and endeavouring to break the rack and manger with his fore feet. He has been known to leap out at a stable-window, through which dung was thrown, after company; and yet in other respects is remarkably quiet. Oxen and cows will not fatten by themselves; but will neglect the finest pasture that is not recommended by society. It would be needless to instance in sheep, which constantly flock together.

But this propensity seems not to be confined to animals of the same species; for we know a doe, still alive, that was brought up from a little fawn with a dairy of cows; with them it goes a-field, and with them it returns to the yard. The dogs of the house take no notice of this deer, being used to her; but, if strange dogs come by, a chase ensues; while the master smiles to see his favourite securely leading her pursuers over hedge, or gate, or stile, till she returns to the cows, who, with fierce lowings and menacing horns, drive the assailants quite out of the pasture.

Even great disparity of kind and size does not always prevent social advances and mutual fellowship. For a very intelligent and observant person has assured me that, in the former part of his life, keeping but one horse, he happened also on a time to have but one solitary hen. These two incongruous animals spent much of their time together in a lonely orchard, where they saw no creature but each other. By degrees an apparent regard began to take place between these two sequestered individuals. The fowl would approach the quadruped with notes of complacency,

[1] [See Letter XI. to Barrington. The present letter is printed in Barrington's *Miscellanies*, p. 251.]

rubbing herself gently against his legs: while the horse would look down with satisfaction, and move with the greatest caution and circumspection, lest he should trample on his diminutive companion. Thus, by mutual good offices, each seemed to console the vacant hours of the other: so that *Milton*, when he puts the following sentiment in the mouth of *Adam*, seems to be somewhat mistaken:

> "Much less can *bird* with *beast*, or fish with fowl,
> "So well converse, nor with the ox the ape." [1]

LETTER XXV.

TO THE SAME.

Selborne, Oct. 2, 1775.

DEAR SIR,

WE have two gangs or hordes of gypsies which infest the south and west of *England*, and come round in their circuit two or three times in the year. One of these tribes calls itself by the noble name of *Stanley*, of which I have nothing particular to say; but the other is distinguished by an appellative somewhat remarkable —As far as their harsh gibberish can be understood, they seem to say that the name of their clan is *Curleople*: now the termination of this word is apparently *Grecian*: and as *Mezeray* and the gravest historians all agree that these vagrants did certainly migrate from *Egypt* and the East, two or three centuries ago, and so spread by degrees over *Europe*, may not this family-name, a little corrupted, be the very name they brought with them from the *Levant?* It would be matter of some curiosity, could one meet with an intelligent person among them, to inquire whether, in their jargon, they still retain any *Greek* words: the *Greek* radicals will appear in hand, foot, head, water, earth, &c. It is possible that amidst their cant and corrupted dialect many mutilated remains of their native language might still be discovered.

With regard to those peculiar people, the gypsies, one thing is very remarkable, and especially as they came from warmer climates; and that is, that while other beggars lodge in barns, stables, and cow-houses, these sturdy savages seem to pride themselves in braving the severities of winter, and in living *sub dio* the

[1] [*Paradise Lost*, viii., 395.]

whole year round. Last *September* was as wet a month as ever was known; and yet during those deluges did a young gypsy-girl lie-in in the midst of one of our hop-gardens, on the cold ground, with nothing over her but a piece of blanket extended on a few hazel-rods bent hoop-fashion, and stuck into the earth at each end, in circumstances too trying for a cow in the same condition: yet within this garden there was a large hop-kiln, into the chambers of which she might have retired, had she thought shelter an object worthy her attention.

Europe itself, it seems, cannot set bounds to the rovings of these vagabonds; for Mr. *Bell*, in his return from *Peking*, met a gang of these people on the confines of *Tartary*, who were endeavouring to penetrate those deserts and try their fortune in *China*.[1]

Gypsies are called in *French Bohemiens*; in *Italian* and modern *Greek*, *Zingani*.

I am, &c.

LETTER XXVI.

TO THE SAME.

Selborne, Nov. 1, 1775.

DEAR SIR,

"Hic - - - - tædæ pingues, hic plurimus ignis
"Semper, et assiduâ postes fuligine nigri."[2]

I SHALL make no apology for troubling you with the detail of a very simple piece of domestic œconomy, being satisfied that you think nothing beneath your attention that tends to utility: the matter alluded to is the use of *rushes* instead of candles, which I am well aware prevails in many districts besides this; but as I know there are countries also where it does not obtain, and as I have considered the subject with some degree of exactness, I shall proceed in my humble story, and leave you to judge of the expediency.

The proper species of *rush* for this purpose seems to be the *juncus conglomeratus*, or common soft rush, which is to be found in most moist pastures, by the sides of streams, and under hedges. These rushes are in best condition in the height of summer; but

[1] See Bell's Travels in China.

[2] [Virg., *Ecl.*, vii., 49, 50.]

may be gathered, so as to serve the purpose well, quite on to autumn. It would be needless to add that the largest and longest are best. Decayed labourers, women, and children, make it their business to procure and prepare them. As soon as they are cut they must be flung into water, and kept there; for otherwise they will dry and shrink, and the peel will not run. At first a person would find it no easy matter to divest a rush of it's peel or rind, so as to leave one regular, narrow, even rib from top to bottom that may support the pith: but this, like other feats, soon becomes familiar even to children; and we have seen an old woman, stone-blind, performing this business with great dispatch, and seldom failing to strip them with the nicest regularity. When these *junci* are thus far prepared, they must lie out on the grass to be bleached, and take the dew for some nights, and afterwards be dried in the sun.

Some address is required in dipping these rushes in the scalding fat or grease; but this knack also is to be attained by practice. The careful wife of an industrious *Hampshire* labourer obtains all her fat for nothing; for she saves the scummings of her bacon-pot for this use; and, if the grease abounds with salt, she causes the salt to precipitate to the bottom, by setting the scummings in a warm oven. Where hogs are not much in use, and especially by the sea-side, the coarser animal-oils will come very cheap. A pound of common grease may be procured for four pence; and about six pounds of grease will dip a pound of rushes; and one pound of rushes may be bought for one shilling: so that a pound of rushes, medicated and ready for use, will cost three shillings. If men that keep bees will mix a little wax with the grease, it will give it a consistency, and render it more cleanly, and make the rushes burn longer: mutton-suet would have the same effect.

A good rush, which measured in length two feet four inches and an half, being minuted, burnt only three minutes short of an hour: and a rush still of greater length has been known to burn one hour and a quarter.

These rushes give a good clear light. Watch-lights (coated with tallow), it is true, shed a dismal one, "darkness visible"; but then the wicks of those have *two* ribs of the rind, or peel, to support the pith, while the wick of the dipped rush has but *one*. The *two* ribs are intended to impede the progress of the flame and make the candle last.

In a pound of dry rushes, avoirdupois, which I caused to be weighed and numbered, we found upwards of one thousand six

hundred individuals. Now suppose each of these burns, one with another, only half an hour, then a poor man will purchase eight hundred hours of light, a time exceeding thirty-three entire days, for three shillings. According to this account each rush, before dipping, costs $\frac{1}{33}$ of a farthing, and $\frac{1}{11}$ afterwards. Thus a poor family will enjoy $5\frac{1}{2}$ hours of comfortable light for a farthing. An experienced old housekeeper assures me that one pound and an half of rushes completely supplies his family the year round, since working people burn no candle in the long days, because they rise and go to bed by daylight.

Little farmers use rushes much in the short days, both morning and evening, in the dairy and kitchen; but the very poor, who are always the worst œconomists, and therefore must continue very poor, buy an halfpenny candle every evening, which, in their blowing open rooms, does not burn much more than two hours. Thus have they only two hours light for their money instead of eleven.[1]

While on the subject of rural œconomy, it may not be improper to mention a pretty implement of housewifery that we have seen no where else; that is, little neat besoms which our foresters make from the stalks of the *polytricum commune* or *great golden maiden-hair*, which they call *silk-wood*, and find plenty in the bogs. When this moss is well combed and dressed, and divested of it's outer skin, it becomes of a beautiful bright-chestnut colour; and, being soft and pliant, is very proper for the dusting of beds, curtains, carpets, hangings, &c. If these besoms were known to the brushmakers in town, it is probable they might come much in use for the purpose above-mentioned.[2]

I am, &c.

[1] [White does not mention the "rush-burners" used to keep the draughts from wasting the rush-lights. Dickens describes the contrivance thus: "As I had asked for a night-light, the chamberlain had brought me in, before he left me, the good old constitutional rush-light of those virtuous days—an object like the ghost of a walking-cane, which instantly broke its back if it were touched, which nothing could ever be lighted at, and which was placed in solitary confinement at the bottom of a high tin tower, perforated with round holes that made a staringly wide-awake pattern on the walls" (*Great Expectations*, chap. xlv.). The pattern was a frequent cause of night-fears to children a hundred years ago. A rush-burner may be seen in the museum at Kew Gardens. Rush-holders of various constructions, spring clips, sockets, etc., are still preserved. Some are figured in the *Illustrated Archæologist*, September, 1894, p. 99, and in *Trans. Cumberland and Westmoreland Antiq. Soc.*, vol. xii.]

[2] A besom of this sort is to be seen in Sir *Ashton Lever's* Museum.

LETTER XXVII.

TO THE SAME.

Selborne, Dec. 12, 1775.

DEAR SIR,

WE had in this village more than twenty years ago an idiot-boy, whom I well remember, who, from a child, shewed a strong propensity to bees; they were his food, his amusement, his sole object. And as people of this cast have seldom more than one point in view, so this lad exerted all his few faculties on this one pursuit. In the winter he dosed away his time, within his father's house, by the fire side, in a kind of torpid state, seldom departing from the chimney-corner; but in the summer he was all alert, and in quest of his game in the fields, and on sunny banks. Honey-bees, humble-bees, and wasps, were his prey wherever he found them: he had no apprehensions from their stings, but would seize them *nudis manibus*, and at once disarm them of their weapons, and suck their bodies for the sake of their honey-bags. Sometimes he would fill his bosom between his shirt and his skin with a number of these captives; and sometimes would confine them in bottles. He was a very *merops apiaster*, or *bee-bird;* and very injurious to men that kept bees; for he would slide into their bee-gardens, and, sitting down before the stools, would rap with his finger on the hives, and so take the bees as they came out. He has been known to overturn hives for the sake of honey, of which he was passionately fond. Where metheglin was making he would linger round the tubs and vessels, begging a draught of what he called *bee-wine*. As he ran about he used to make a humming noise with his lips, resembling the buzzing of bees. This lad was lean and sallow, and of a cadaverous complexion; and, except in his favourite pursuit, in which he was wonderfully adroit, discovered no manner of understanding. Had his capacity been better, and directed to the same object, he had perhaps abated much of our wonder at the feats of a more modern exhibiter of bees; and we may justly say of him now,

"— — — — — — — — Thou,
"Had thy presiding star propitious shone,
"Should'st *Wildman*[1] be — — — —."

[1] [Thomas Wildman, a noted beemaster, and author of a *Treatise on the Management of Bees*, London, 1768, 4to.]

When a tall youth he was removed from hence to a distant village, where he died, as I understand, before he arrived at manhood.

I am, &c.

LETTER XXVIII.

TO THE SAME.

Selborne, Jan. 8, 1776.

Dear Sir,

It is the hardest thing in the world to shake off superstitious prejudices: they are sucked in as it were with our mother's milk; and, growing up with us at a time when they take the fastest hold and make the most lasting impressions, become so interwoven into our very constitutions, that the strongest good sense is required to disengage ourselves from them. No wonder therefore that the lower people retain them their whole lives through, since their minds are not invigorated by a liberal education, and therefore not enabled to make any efforts adequate to the occasion.

Such a preamble seems to be necessary before we enter on the superstitions of this district, lest we should be suspected of exaggeration in a recital of practices too gross for this enlightened age.

But the people of *Tring*, in *Hertfordshire*, would do well to remember, that no longer ago than the year 1751, and within twenty miles of the capital, they seized on two superannuated wretches, crazed with age, and overwhelmed with infirmities, on a suspicion of witchcraft; and, by trying experiments, drowned them in a horse-pond.

In a farm-yard near the middle of this village stands, at this day, a row of pollard-ashes, which, by the seams and long cicatrices down their sides, manifestly show that, in former times, they have been cleft asunder. These trees, when young and flexible, were severed and held open by wedges, while ruptured children, stripped naked, were pushed through the apertures, under a persuasion that, by such a process, the poor babes would be cured of their infirmity. As soon as the operation was over, the tree, in the suffering part, was plastered with loam, and carefully swathed up. If the parts coalesced and

soldered together, as usually fell out, where the feat was performed with any adroitness at all, the party was cured; but, where the cleft continued to gape, the operation, it was supposed, would prove ineffectual. Having occasion to enlarge my garden not long since, I cut down two or three such trees, one of which did not grow together.

We have several persons now living in the village, who, in their childhood, were supposed to be healed by this superstitious ceremony, derived down perhaps from our *Saxon* ancestors, who practised it before their conversion to Christianity.

At the south corner of the *Plestor*, or area, near the church, there stood, about twenty years ago, a very old grotesque hollow pollard-ash, which for ages had been looked on with no small veneration as a *shrew-ash*. Now a shrew-ash is an ash whose twigs or branches, when gently applied to the limbs of cattle, will immediately relieve the pains which a beast suffers from the running of a *shrew-mouse* over the part affected: for it is supposed that a shrew-mouse is of so baneful and deleterious a nature, that wherever it creeps over a beast, be it horse, cow, or sheep, the suffering animal is afflicted with cruel anguish, and threatened with the loss of the use of the limb. Against this accident, to which they were continually liable, our provident fore-fathers always kept a shrew-ash at hand, which, when once medicated, would maintain it's virtue for ever. A shrew-ash was made thus[1]:—Into the body of the tree a deep hole was bored with an auger, and a poor devoted shrew-mouse was thrust in alive, and plugged in, no doubt, with several quaint incantations long since forgotten. As the ceremonies necessary for such a consecration are no longer understood, all succession is at an end, and no such tree is known to subsist in the manor, or hundred.

As to that on the *Plestor*,

"The late vicar stubb'd and burnt it,"

when he was way-warden, regardless of the remonstrances of the by-standers, who interceded in vain for it's preservation, urging it's power and efficacy, and alledging that it had been

"Religione patrum multos servata per annos".[2]

I am, &c.

[1] For a similar practice, see *Plot's Staffordshire*.
[2] [Virg., *Æn.*, ii., 715.]

LETTER XXIX.

TO THE SAME.

Selborne, Feb. 7, 1776.

DEAR SIR,

IN heavy fogs, on elevated situations especially, trees are perfect alembics: and no one that has not attended to such matters can imagine how much water one tree will distil in a night's time, by condensing the vapour, which trickles down the twigs and boughs, so as to make the ground below quite in a float. In *Newton-lane*, in *October* 1775, on a misty day, a particular oak in leaf dropped so fast that the cart-way stood in puddles and the ruts ran with water, though the ground in general was dusty.

In some of our smaller islands in the *West-Indies*, if I mistake not, there are no springs or rivers; but the people are supplied with that necessary element, water, merely by the dripping of some large tall trees, which, standing in the bosom of a mountain, keep their heads constantly enveloped with fogs and clouds, from which they dispense their kindly never-ceasing moisture; and so render those districts habitable by condensation alone.

Trees in leaf have such a vast proportion more of surface than those that are naked, that, in theory, their condensations should greatly exceed those that are stripped of their leaves; but, as the former *imbibe* also a great quantity of moisture, it is difficult to say which drip most: but this I know, that deciduous trees that are entwined with much ivy seem to distil the greatest quantity. Ivy-leaves are smooth, and thick, and cold, and therefore condense very fast; and besides ever-greens imbibe very little. These facts may furnish the intelligent with hints concerning what sorts of trees they should plant round small ponds that they would wish to be perennial; and shew them how advantageous some trees are in preference to others.

Trees perspire profusely, condense largely, and check evaporation so much, that woods are always moist: no wonder therefore that they contribute much to pools and streams.

That trees are great promoters of lakes and rivers appears from a well known fact in *North-America;* for, since the woods and forests have been grubbed and cleared, all bodies of water are much diminished; so that some streams, that were very

considerable a century ago, will not now drive a common mill.[1] Besides, most woodlands, forests, and chases, with us abound with pools and morasses; no doubt for the reason given above.

To a thinking mind few phenomena are more strange than the state of little ponds on the summits of chalk-hills, many of which are never dry in the most trying droughts of summer. On *chalk-hills* I say, because in many rocky and gravelly soils springs usually break out pretty high on the sides of elevated grounds and mountains; but no person acquainted with chalky districts will allow that they ever saw springs in such a soil but in vallies and bottoms, since the waters of so pervious a stratum as chalk all lie on one dead level, as well-diggers have assured me again and again.

Now we have many such little round ponds in this district; and one in particular on our sheep-down, three hundred feet above my house; which, though never above three feet deep in the middle, and not more than thirty feet in diameter, and containing perhaps not more than two or three hundred hogsheads of water, yet never is known to fail, though it affords drink for three hundred or four hundred sheep, and for at least twenty head of large cattle beside. This pond, it is true, is over-hung with two moderate beeches,[2] that, doubtless, at times afford it much supply: but then we have others as small, that, without the aid of trees, and in spite of evaporation from sun and wind, and perpetual consumption by cattle, yet constantly maintain a moderate share of water, without overflowing in the wettest seasons, as they would do if supplied by springs. By my journal of *May* 1775, it appears that "the small and even "considerable ponds in the vales are now dried up, while the "small ponds on the very tops of hills are but little affected". Can this difference be accounted for from evaporation alone, which certainly is more prevalent in bottoms? or rather have not those elevated pools some unnoticed recruits, which in the night time counter-balance the waste of the day; without which the cattle alone must soon exhaust them? And here it will be necessary to enter more minutely into the cause. Dr. *Hales*, in

[1] Vide *Kalm's* Travels to *North-America*.

[2] [One of the identical beeches here referred to was, for at least fifty or sixty years, leaning at a considerable angle over the pond, and has fallen prone into the water only very recently. It was not a large tree; it had become somewhat decayed, but retained its leafy head until it fell uprooted.—*Bell.*]

his Vegetable Statics, advances, from experiment, that "the "moister the earth is the more dew falls on it in a night: and "more than a *double* quantity of dew falls on a surface of *water* "than there does on an equal surface of moist earth". Hence we see that water, by it's coolness, is enabled to assimilate to itself a large quantity of moisture nightly by condensation; and that the air, when loaded with fogs and vapours, and even with copious dews, can alone advance a considerable and never-failing resource. Persons that are much abroad, and travel early and late, such as shepherds, fishermen, &c. can tell what prodigious fogs prevail in the night on elevated downs, even in the hottest parts of summer; and how much the surfaces of things are drenched by those swimming vapours, though, to the senses, all the while, little moisture seems to fall.[1]

I am, &c.

[1] [White's account of the dew-ponds of Hampshire and Sussex can be largely confirmed by recent observations. A good modern description of such ponds is to be found in a prize essay on "Water Supply," by the Rev. J. Clutterbuck (*Journ. Roy. Agric. Soc.*, 2nd ser., vol. i., 1865, pp. 271-87). He says that the tops of chalk-hills, where no surface-water or springs can furnish a supply, are often chosen as the sites of dew-ponds. They "are constructed by persons of experience and skill. At the spot selected an excavation is made in the surface of the chalk, either round or rectangular, from 30 to 40 feet or more in diameter, from 4 to 6 feet deep. The bottom, of a basin shape, is covered in portions with clay carefully tempered, mixed with a considerable quantity of lime to prevent the working of the earth-worms. As the portions are finished they are protected from the action of the sun and atmosphere by a covering of straw; when the whole bottom of the pond is so covered with an efficient and impermeable coating or puddle, a layer of broken chalk is placed upon it to prevent its injury by cattle or other means. Their cost varies from £30 to £50. When all is finished, water is introduced by artificial means. If there is a fall of snow, this is collected and piled up in the pond, as the readiest and least expensive method of accomplishing the object. . . . Ponds so constructed and filled have been known for periods of twenty or thirty years never to become dry; the summer of 1864 was a notable exception" (1887 was another).

Mr. Clutterbuck believes that dew-ponds are "not easily accounted for by recognised physical causes". Nevertheless, an explanation may be attempted. It is plain that the water in such ponds is not drawn from springs, nor from surface-drainage, nor wholly from rain. Part of the supply, and probably a large part, comes from the invisible moisture of the atmosphere. Moisture-laden winds, rising from lower levels, become chilled by expansion, and throw down their water, either in the form of clouds, such as often gather round a mountain-top, or dew. Such condensation takes place on a very large scale on the Alps, where the great excess of condensation over evaporation is very clearly and simply shown by the large and rapid rivers which flow out of Switzerland.

Hales' view (quoted by White) that more than twice as much dew is deposited upon water as upon an equal surface of moist earth cannot be accepted. He does not take into account circumstances which may greatly affect the rate of cooling and consequently the amount of condensation. Thus it may often be observed that when a copious dew has been deposited upon the seats of an open boat, none is to be seen on the bottom. Contact with a large body of insufficiently cooled

LETTER XXX.

TO THE SAME

Selborne, April 3, 1776.

DEAR SIR,

MONSIEUR HERISSANT, a *French* anatomist, seems persuaded that he has discovered the reason why cuckoos do not hatch their own eggs; the impediment, he supposes, arises from the internal

water (as of a deep lake) has kept the bottom of the boat at a temperature above the dew-point.

Water is so bad a conductor of heat that some difficulty may be found in understanding how a pond can cool sufficiently during a summer night to act as an efficient condenser. But though water conducts heat very badly, every surface-layer, as it cools by radiation, becomes denser, and sinks. Continual replacement of the surface-layer by convection-currents may thus cool down the water as effectually as if the heat were freely conducted away. A shallow pond on a hill-top may in the course of a few hours become colder than the surrounding rocks and earth, and act as an efficient condenser.

Dew-ponds abound in Sussex, and are not uncommon elsewhere on the chalk-hills of the south-eastern counties. Buttermere pond, near Inkpen Beacon (Berkshire), at a height of considerably over 900 feet, is never dry, though it waters a large flock of sheep.—(T. W. Shore.) But in Hertfordshire, Lincolnshire and Yorkshire few or none are to be found. The "meres" of upland farms in Derbyshire have much in common with dew-ponds, but they are not characteristic examples. Advantage is taken, whenever possible, of the wash from a road, and of any surface-drainage, and the "meres" frequently dry up altogether. The presence or absence of true dew-ponds in a particular district may depend upon the distance from the sea in a north-east to a south-west line. The south-west winds, which bring the chief part of our atmospheric moisture, can reach the South Downs almost direct from the sea, while they can only reach the chalk-hills of the midlands and the north of England after traversing a great extent of country, and crossing many ranges of hills.

Mr. Clement Reid, F.R.S., of the Geological Survey, favours us with the following additional information:—

"The conditions that are required for a permanent dew-pond do not seem generally to be understood; failure or success appearing to be the result of chance rather than of any clear comprehension of the principle on which the dew-pond acts. On comparing, at the end of a long drought, the dried-up ponds with those that still contain water, we find that, other things being equal, the best dew-pond has the following characteristics:—

"It is sheltered on the south-west side by an overhanging tree, often only a stunted, ivy-covered thorn or oak, or by a bush of holly. Or else the hollow is sufficiently deep for the south bank to cut off much of the sun. The depth or shallowness of the water does not appear to make so great a difference as would be expected.

"When one of these ponds is examined in the middle of a hot summer day it would appear that the few inches of water in it could only last a week. But in early morning or towards evening, or whenever a sea-mist drifts in, there is a continuous drip from the smooth leaves of the overhanging tree. There appears also to be a considerable amount of condensation on the surface of the water itself, though roads adjoining may be quite dry and dusty. In fact, whenever dew is on

structure of their parts, which incapacitates them for incubation. According to this gentleman, the crop, or craw of a cuckoo does not lie before the sternum at the bottom of the neck, as in the *gallinæ, columbæ,* &c., but immediately behind it, on and over the bowels, so as to make a large protuberance in the belly.[1]

Induced by this assertion, we procured a cuckoo; and, cutting open the breast-bone, and exposing the intestines to sight, found the crop lying as mentioned above. This stomach was large and round, and stuffed hard like a pin-cushion with food, which, upon nice examination, we found to consist of various insects; such as small scarabs, spiders, and dragon-flies; the last of which we have seen cuckoos catching on the wing as they were just emerging out of the aurelia state. Among this farrago also were to be seen maggots, and many seeds, which belonged either to gooseberries, currants, cranberries, or some such fruit; so that these birds apparently subsist on insects and fruits: nor was there the least appearance of bones, feathers, or fur, to support the idle notion of their being birds of prey.

The sternum in this bird seemed to us to be remarkably short, between which and the anus lay the crop, or craw, and immediately behind that the bowels against the back-bone.

the grass the dew-pond is receiving moisture, and this moisture, owing to the shade of the overhanging tree, is partly preserved throughout the day, so that sheep or cattle may drink daily from a small shallow pond which receives no rain, and yet the pond be not exhausted unless the nights are exceptionally dry."

In "The Natural History of Isolated Ponds," a paper contributed to the *Transactions of the Norfolk and Norwich Naturalists' Society*, vol. v., Mr. Reid points out that isolated dew-ponds contain many forms of animal and vegetable life. Human agency is not likely to be concerned, for it is rare that a vehicle, a spade, or even the boots of a shepherd are brought to a dew-pond from the low levels. "The sheep remain on the downs, and when taken to the lower lands to fatten they do not come back again; when transferred to lower ground during severe weather they are kept as far as possible on dry spots." Among the plants are enumerated species of *Ranunculus*, *Potamogeton*, *Elodea*, *Zannichellia*, *Juncus* and *Chara;* the animals include species of *Limnæa* and *Planorbis;* the stickleback was found once. Mr. Reid believes that these species are most often transported on the feet of birds. Dr. G. S. Brady, F.R.S., finds in dew-ponds "a somewhat restricted entomostracan fauna, similar in kind to that of the surrounding country". Owing to the artificial, and in most cases the recent origin of these isolated ponds, examination of their fauna and flora gives valuable information as to the facility with which certain aquatic species can be dispersed.

Mr. T. W. Shore has observed dew-ponds near ancient British camps, and believes that this method of obtaining water may have been known to the people (probably of the Bronze Age) who made the camps.

A discussion on dew-ponds will be found in the Report of the British Association for 1900.]

[1] *Histoire de l'Académie Royale*, 1752.

It must be allowed, as this anatomist observes, that the crop placed just upon the bowels, must, especially when full, be in a very uneasy situation during the business of incubation; yet the test will be to examine whether birds that are actually known to sit for certain are not formed in a similar manner. This inquiry I proposed to myself to make with a *fern-owl*, or goat-sucker, as soon as opportunity offered: because, if their formation proves the same, the reason for incapacity in the cuckoo will be allowed to have been taken up somewhat hastily.

Not long after a fern-owl was procured, which, from it's habit and shape, we suspected might resemble the cuckoo in it's internal construction. Nor were our suspicions ill-grounded; for, upon the dissection, the crop, or craw, also lay behind the sternum, immediately on the viscera, between them and the skin of the belly. It was bulky, and stuffed hard with large *phalænæ*, moths of several sorts, and their eggs, which no doubt had been forced out of those insects by the action of swallowing.

Now as it appears that this bird, which is so well known to practise incubation, is formed in a similar manner with cuckoos, Monsieur *Herissant*'s conjecture, that cuckoos are incapable of incubation from the disposition of their intestines, seems to fall to the ground: and we are still at a loss for the cause of that strange and singular peculiarity in the instance of the *cuculus canorus*.

We found the case to be the same with the ring-tail hawk, in respect to formation; and, as far as I can recollect, with the swift; and probably it is so with many more sorts of birds that are not granivorous.

I am, &c.

LETTER XXXI.

TO THE SAME.

Selborne, April 29, 1776.

Dear Sir,

On *August* the 4th, 1775, we surprised a large viper, which seemed very heavy and bloated, as it lay in the grass basking in the sun. When we came to cut it up, we found that the abdomen was crowded with young, fifteen in number; the shortest of which measured full seven inches, and were about

the size of full-grown earth-worms. This little fry issued into the world with the true viper-spirit about them, shewing great alertness as soon as disengaged from the belly of the dam: they twisted and wriggled about, and set themselves up, and gaped very wide when touched with a stick, shewing manifest tokens of menace and defiance, though as yet they had no manner of fangs that we could find, even with the help of our glasses.

To a thinking mind nothing is more wonderful than that early instinct which impresses young animals with the notion of the situation of their natural weapons, and of using them properly in their own defence, even before those weapons subsist or are formed. Thus a young cock will spar at his adversary before his spurs are grown; and a calf or a lamb will push with their heads before their horns are sprouted. In the same manner did these young adders attempt to bite before their fangs were in being. The dam however was furnished with very formidable ones, which we lifted up (for they fold down when not used) and cut them off with the point of our scissars.

There was little room to suppose that this brood had ever been in the open air before; and that they were taken in for refuge, at the mouth of the dam, when she perceived that danger was approaching; because then probably we should have found them somewhere in the neck, and not in the abdomen.

LETTER XXXII.

TO THE SAME.

Castration has a strange effect: it emasculates both man, beast, and bird, and brings them to a near resemblance of the other sex. Thus eunuchs have smooth unmuscular arms, thighs and legs; and broad hips, and beardless chins, and squeaking voices. Gelt-stags and bucks have hornless heads, like hinds and does. Thus wethers have small horns, like ewes; and oxen large bent horns, and hoarse voices when they low, like cows: for bulls have short straight horns; and though they mutter and grumble in a deep tremendous tone, yet they low in a shrill high key. Capons have small combs and gills, and look pallid about the head, like pullets; they also walk without any parade, and hover chickens like hens. Barrow-hogs have also small tusks like sows.

Thus far it is plain that the deprivation of *masculine vigour*

puts a stop to the growth of those parts or appendages that are looked upon as it's insignia. But the ingenious Mr. *Lisle*, in his book on husbandry, carries it much farther; for he says that the loss of those insignia alone has sometimes a strange effect on the ability itself: he had a boar so fierce and venereous, that, to prevent mischief, orders were given for his tusks to be broken off. No sooner had the beast suffered this injury than his powers forsook him, and he neglected those females to whom before he was passionately attached, and from whom no fences could restrain him.

LETTER XXXIII.

TO THE SAME.

THE natural term of an hog's life is little known, and the reason is plain—because it is neither profitable nor convenient to keep that turbulent animal to the full extent of it's time: however, my neighbour, a man of substance, who had no occasion to study every little advantage to a nicety, kept an half bred Bantam-sow, who was as thick as she was long, and whose belly swept on the ground till she was advanced to her seventeenth year; at which period she shewed some tokens of age by the decay of her teeth and the decline of her fertility.

For about ten years this prolific mother produced two litters in the year of about ten at a time, and once above twenty at a litter; but, as there were near double the number of pigs to that of teats many died. From long experience in the world this female was grown very sagacious and artful:—when she found occasion to converse with a boar she used to open all the intervening gates, and march, by herself, up to a distant farm where one was kept; and when her purpose was served would return by the same means. At the age of about fifteen her litters began to be reduced to four or five; and such a litter she exhibited when in her fatting-pen. She proved, when fat, good bacon, juicy, and tender; the rind, or sward, was remarkably thin. At a moderate computation she was allowed to have been the fruitful parent of three hundred pigs: a prodigious instance of fecundity in so large a quadruped! She was killed in spring 1775.

I am, &c.

LETTER XXXIV.

TO THE SAME.

Selborne, May 9, 1776.

DEAR SIR,

"— — — — — — admorunt ubera tigres."

WE have remarked in a former letter how much incongruous animals, in a lonely state, may be attached to each other from a spirit of sociality; in this it may not be amiss to recount a different motive which has been known to create as strange a fondness.

My friend had a little helpless *leveret* brought to him, which the servants fed with milk in a spoon, and about the same time his cat kittened and the young were dispatched and buried. The hare was soon lost, and supposed to be gone the way of most fondlings, to be killed by some dog or cat. However, in about a fortnight, as the master was sitting in his garden in the dusk of the evening, he observed his cat, with tail erect, trotting towards him, and calling with little short inward notes of complacency, such as they use towards their kittens, and something gamboling after, which proved to be the leveret that the cat had supported with her milk, and continued to support with great affection.

Thus was a graminivorous animal nurtured by a carnivorous and predaceous one!

Why so cruel and sanguinary a beast as a cat, of the ferocious genus of *Feles*, the *murium leo*, as *Linnæus* calls it, should be affected with any tenderness towards an animal which is it's natural prey, is not so easy to determine.

This strange affection probably was occasioned by that desiderium, those tender maternal feelings, which the loss of her kittens had awakened in her breast; and by the complacency and ease she derived to herself from the procuring her teats to be drawn, which were too much distended with milk, till, from habit, she become as much delighted with this foundling as if it had been her real offspring.

This incident is no bad solution of that strange circumstance which grave historians as well as the poets assert, of exposed children being sometimes nurtured by female wild beasts that probably had lost their young. For it is not one whit more

marvellous that *Romulus* and *Remus*, in their infant state, should be nursed by a she-wolf, than that a poor little sucking leveret should be fostered and cherished by a bloody grimalkin.

"— — — — viridi fœtam Mavortis in antro
"Procubuisse lupam: geminos huic ubera circum
"Ludere pendentes pueros, et lambere matrem
"Impavidos: illam tereti cervice reflexam
"Mulcere alternos, et corpora fingere linguâ." [1]

LETTER XXXV.

TO THE SAME.

Selborne, May 20, 1770.

Dear Sir,

Lands that are subject to frequent inundations are always poor; and probably the reason may be because the worms are drowned. The most insignificant insects and reptiles are of much more consequence, and have much more influence in the œconomy of Nature, than the incurious are aware of; and are mighty in their effect, from their minuteness, which renders them less an object of attention; and from their numbers and fecundity. Earth-worms, though in appearance a small and despicable link in the chain of Nature, yet, if lost, would make a lamentable chasm. For, to say nothing of half the birds, and some quadrupeds which are almost entirely supported by them, worms seem to be the great promoters of vegetation, which would proceed but lamely without them, by boring, perforating, and loosening the soil, and rendering it pervious to rains and the fibres of plants, by drawing straws and stalks of leaves and twigs into it; and, most of all, by throwing up such infinite numbers of lumps of earth called worm-casts, which, being their excrement, is a fine manure for grain and grass. Worms probably provide new soil for hills and slopes where the rain washes the earth away; and they affect slopes, probably to avoid being flooded. Gardeners and farmers express their detestation of worms; the former because they render their walks unsightly, and make them much work: and the latter because, as they think, worms eat their green corn. But these men would find that the earth without worms would soon become cold, hard-bound, and void of fermentation;

[1] [Virg., *Æn.*, viii., 630-34.]

and consequently steril: and besides, in favour of worms, it should be hinted that green corn, plants, and flowers, are not so much injured by them as by many species of *coleoptera* (scarabs), and *tipulæ* (long-legs) in their larva, or grub-state; and by unnoticed myriads of small shell-less snails, called slugs, which silently and imperceptibly make amazing havock in the field and garden.[1]

These hints we think proper to throw out in order to set the inquisitive and discerning to work.[2]

A good monography of worms would afford much entertainment and information at the same time, and would open a large and new field in natural history. Worms work most in the spring; but by no means lie torpid in the dead months; are out every mild night in the winter, as any person may be convinced that will take the pains to examine his grass-plots with a candle; are hermaphrodites, and much addicted to venery, and consequently very prolific.

I am, &c.

LETTER XXXVI.[3]

TO THE SAME.

Selborne, Nov. 22, 1777.

Dear Sir,

You cannot but remember that the twenty-sixth and twenty-seventh of last *March* were very hot days; so sultry that everybody complained and were restless under those sensations to which they had not been reconciled by gradual approaches.

This sudden summer-like heat was attended by many summer coincidences; for on those two days the thermometer rose to sixty-six in the shade; many species of insects revived and came forth; some bees swarmed in this neighbourhood; the old tortoise, near *Lewes,* in *Sussex,* awakened and came forth out of it's

[1] Farmer *Young*, of *Norton-farm*, says that this spring (1777) about four acres of his wheat in one field was entirely destroyed by *slugs*, which swarmed on the blades of corn, and devoured it as fast as it sprang.

[2] [It is now only necessary to refer the reader to Darwin's paper "On the Formation of Mould" (*Geol. Trans.*, 2nd series, vol. v., p. 505), and his book on *The Formation of Vegetable Mould through the action of Worms* (1881). Darwin only quotes this anticipatory letter in a cursory way, and seems hardly aware of its importance.]

[3] [This letter is printed in Barrington's *Miscellanies*, p. 225.]

dormitory; and, what is most to my present purpose, many *house-swallows* appeared and were very alert in many places, and particularly at *Cobham*, in *Surrey*.

But as that short warm period was succeeded as well as preceded by harsh severe weather, with frequent frosts and ice, and cutting winds, the insects withdrew, the tortoise retired again into the ground, and the swallows were seen no more until the tenth of *April*, when, the rigour of the spring abating, a softer season began to prevail.

Again; it appears by my journals for many years past, that *house-martins* retire, to a bird, about the beginning of *October;* so that a person not very observant of such matters would conclude that they had taken their last farewell: but then it may be seen in my diaries also that considerable flocks have discovered themselves again in the first week of *November*, and often on the fourth day of that month only *for one day;* and that not as if they were in actual migration, but playing about at their leisure and feeding calmly, as if no enterprize of moment at all agitated their spirits.[1] And this was the case in the beginning of this very month; for, on the fourth of *November*, more than twenty house-martins, which, in appearance, had all departed about the seventh of *October*, were seen again, for that *one morning only*, sporting between my fields and *the Hanger*, and feasting on insects which swarmed in that sheltered district. The preceding day was wet and blustering, but the fourth was dark and mild, and soft, the wind at south-west, and the thermometer at $58'\frac{1}{2}$; a pitch not common at that season of the year. Moreover, it may not be amiss to add in this place, that whenever the thermometer is above 50 the bat comes flitting out in every autumnal and winter-month.[2]

From all these circumstances laid together, it is obvious that torpid insects, reptiles, and quadrupeds, are awakened from their profoundest slumbers by a little untimely warmth; and therefore that nothing so much promotes this death-like stupor as a defect of heat. And farther, it is reasonable to suppose that two whole species, or at least many individuals of those two species, of *British*

[1] [This description well suits the swallow kind on their autumnal migration, which is always *leisurely*. It needs an attentive observer to discover that they are actually travelling, so much do they seem to dally on the way. White had apparently never seen them thus travelling in sufficient numbers to attract his attention; hence the erroneous conclusion in the last paragraph of this letter. See *Introduction*, p. xxxv.]

[2] [I have seen the Pipistrelle, the commonest of our bats, flying in every month in the year; and whenever gnats are tempted to come forth, the bat is sure to follow for a meal.—*Bell.*]

hirundines, do never leave this island at all, but partake of the same benumbed state: for we cannot suppose that, after a month's absence, house-martins can return from southern regions to appear for *one* morning in *November*, or that house-swallows should leave the districts of *Africa* to enjoy, in *March*, the transient summer of a *couple* of days.

I am, &c.

LETTER XXXVII.

TO THE SAME.

Selborne, Jan. 8, 1778.

DEAR SIR,

THERE was in this village several years ago a miserable pauper, who, from his birth, was afflicted with a leprosy, as far as we are aware of a singular kind, since it affected only the palms of his hands and the soles of his feet. This scaly eruption usually broke out twice in the year, at the spring and fall; and, by peeling away, left the skin so thin and tender that neither his hands or feet were able to perform their functions; so that the poor object was half his time on crutches, incapable of employ, and languishing in a tiresome state of indolence and inactivity. His habit was lean, lank, and cadaverous. In this sad plight he dragged on a miserable existence, a burden to himself and his parish, which was obliged to support him till he was relieved by death at more than thirty years of age.

The good women, who love to account for every defect in children by the doctrine of longing, said that his mother felt a violent propensity for oysters, which she was unable to gratify; and that the black rough scurf on his hands and feet were the shells of that fish. We knew his parents, neither of which were lepers; his father in particular lived to be far advanced in years.

In all ages the leprosy has made dreadful havock among mankind. The *Israelites* seem to have been greatly afflicted with it from the most remote times; as appears from the peculiar and repeated injunctions given them in the *Levitical* law.[1] Nor was the rancour of this foul disorder much abated in the last period of their commonwealth, as may be seen in many passages of the New Testament.

[1] See Leviticus, chap. xiii. and xiv.

Some centuries ago this horrible distemper prevailed all *Europe* over; and our forefathers were by no means exempt, as appears by the large provision made for objects labouring under this calamity. There was an hospital for female lepers in the diocese of *Lincoln*, a noble one near *Durham*, three in *London* and *Southwark*, and perhaps many more in or near our great towns and cities. Moreover, some crowned heads, and other wealthy and charitable personages, bequeathed large legacies to such poor people as languished under this hopeless infirmity.

It must therefore, in these days, be, to an humane and thinking person, a matter of equal wonder and satisfaction, when he contemplates how nearly this pest is eradicated, and observes that a leper now is a rare sight. He will, moreover, when engaged in such a train of thought, naturally enquire for the reason. This happy change perhaps may have originated and been continued from the much smaller quantity of salted meat and fish now eaten in these kingdoms; from the use of linen next the skin; from the plenty of better bread; and from the profusion of fruits, roots, legumes, and greens, so common in every family. Three or four centuries ago, before there were any enclosures, sown-grasses, field-turnips, or field-carrots, or hay, all the cattle which had grown fat in summer, and were not killed for winter-use, were turned out soon after *Michaelmas* to shift as they could through the dead months; so that no fresh meat could be had in winter or spring. Hence the marvellous account of the vast stores of salted flesh found in the larder of the eldest *Spencer*[1] in the days of *Edward* the Second, even so late in the spring as the third of *May*. It was from magazines like these that the turbulent barons supported in idleness their riotous swarms of retainers ready for any disorder or mischief. But agriculture is now arrived at such a pitch of perfection, that our best and fattest meats are killed in the winter; and no man need eat salted flesh, unless he prefers it, that has money to buy fresh.

One cause of this distemper might be, no doubt, the quantity of wretched fresh and salt fish consumed by the commonalty at all seasons as well as in lent; which our poor now would hardly be persuaded to touch.

The use of linen changes, shirts or shifts, in the room of sordid and filthy woollen, long worn next the skin, is a matter of neat-

[1] *Viz.* six hundred bacons, eighty carcasses of beef, and six hundred muttons.

ness comparatively modern; but must prove a great means of preventing cutaneous ails. At this very time woollen instead of linen prevails among the poorer *Welch*, who are subject to foul eruptions.

The plenty of good wheaten bread that now is found among all ranks of people in the south, instead of that miserable sort which used in old days to be made of barley or beans, may contribute not a little to the sweetening their blood and correcting their juices; for the inhabitants of mountainous districts, to this day, are still liable to the itch and other cutaneous disorders, from a wretchedness and poverty of diet.

As to the produce of a garden, every middle-aged person of observation may perceive, within his own memory, both in town and country, how vastly the consumption of vegetables is increased. Green-stalls in cities now support multitudes in a comfortable state, while gardeners get fortunes. Every decent labourer also has his garden, which is half his support, as well as his delight; and common farmers provide plenty of beans, peas, and greens, for their hinds to eat with their bacon; and those few that do not are despised for their sordid parsimony, and looked upon as regardless of the welfare of their dependants. Potatoes have prevailed in this little district, by means of premiums, within these twenty years only; and are much esteemed here now by the poor, who would scarce have ventured to taste them in the last reign.

Our *Saxon* ancestors certainly had some sort of cabbage, because they call the month of *February sprout-cale;* but, long after their days, the cultivation of gardens was little attended to. The religious, being men of leisure, and keeping up a constant correspondence with *Italy*, were the first people among us that had gardens and fruit-trees in any perfection, within the walls of their abbies[1] and priories. The *barons* neglected every pursuit that did not lead to war or tend to the pleasure of the chase.

It was not till gentlemen took up the study of horticulture themselves that the knowledge of gardening made such hasty advances. Lord *Cobham*, Lord *Ila*, and Mr. *Waller* of *Beaconsfield*, were some of the first people of rank that promoted the elegant

[1] "In *monasteries* the lamp of knowledge continued to burn, however dimly. "In them men of business were formed for the state: the art of writing was culti- "vated by the *monks;* they were the only proficients in mechanics, *gardening*, and "architecture." See *Dalrymple's* Annals of *Scotland.*

science of ornamenting without despising the superintendence of the kitchen quarters and fruit walls.

A remark made by the excellent Mr. *Ray* in his Tour of *Europe* at once surprises us, and corroborates what has been advanced above; for we find him observing, so late as his days, that "the *Italians* use several herbs for sallets, which *are not yet* "or have not been but *lately* used in *England*, viz. *selleri* (celery) "which is nothing else but the sweet smallage; the young shoots "whereof, with a little of the head of the root cut off, they eat "raw with oil and pepper". And farther he adds "*curled endive* "blanched is much used beyond seas; and, for a raw sallet, seemed "to excel lettuce itself". Now this journey was undertaken no longer ago than in the year 1663.

I am, &c.

LETTER XXXVIII.

TO THE SAME.

"Fortè puer, comitum seductus ab agmine fido,
"Dixerat, ecquis adest? et, adest, responderat echo.
"Hic stupet; utque aciem partes divisit in omnes;
"Voce, veni, clamat magna. Vocat illa vocantem."[1]

Selborne, Feb. 12, 1778.

DEAR SIR,

IN a district so diversified as this, so full of hollow vales and hanging woods, it is no wonder that echoes should abound. Many we have discovered that return the cry of a pack of dogs, the notes of a hunting-horn, a tunable ring of bells, or the melody of birds, very agreeably: but we were still at a loss for a poly-syllabical, articulate echo, till a young gentleman, who had parted from his company in a summer evening walk, and was calling after them, stumbled upon a very curious one in a spot where it might least be expected. At first he was much surprised, and could not be persuaded but that he was mocked by some boy; but, repeating his trials in several languages, and finding his respondent to be a very adroit polyglot, he then discerned the deception.

This echo in an evening, before rural noises cease, would repeat

[1] [Ov., *Met.*, iii., 379-80.]

ten syllables most articulately and distinctly, especially if quick dactyls were chosen. The last syllables of

"Tityre, tu patulæ recubans - - -"

were as audibly and intelligibly returned as the first: and there is no doubt, could trial have been made, but that at midnight, when the air is very elastic, and a dead stillness prevails, one or two syllables more might have been obtained; but the distance rendered so late an experiment very inconvenient.

Quick dactyls, we observed, succeeded best; for when we came to try it's powers in slow, heavy, embarrassed spondees of the same number of syllables,

"Monstrum horrendum, informe, ingens - - -"

we could perceive a return but of four or five.

All echoes have some one place to which they are returned stronger and more distinct than to any other; and that is always the place that lies at right angles with the object of repercussion, and is not too near, nor too far off. Buildings, or naked rocks, re-echo much more articulately than hanging wood or vales; because in the latter the voice is as it were entangled, and embarrassed in the covert, and weakened in the rebound.

The true object of this echo, as we found by various experiments, is the stone-built, tiled hop-kiln in *Gally-lane*, which measures in front 40 feet, and from the ground to the eaves 12 feet. The true *centrum phonicum*, or just distance, is one particular spot in the *King's-field*, in the path to *Nore-hill*, on the very brink of the steep balk above the hollow cart way. In this case there is no choice of distance; but the path, by meer contingency, happens to be the lucky, the identical spot, because the ground rises or falls so immediately, if the speaker either retires or advances, that his mouth would at once be above or below the object.

We measured this polysyllabical echo with great exactness, and found the distance to fall very short of Dr. *Plot*'s rule for distinct articulation: for the Doctor, in his history of *Oxfordshire*, allows 120 feet for the return of each syllable distinctly: hence this echo, which gives ten distinct syllables, ought to measure 400 yards, or 120 feet to each syllable; whereas our distance is only 258 yards, or near 75 feet, to each syllable. Thus our measure falls short of the Doctor's, as five to eight: but then it must be acknowledged that this candid philosopher was convinced after-

wards, that some latitude must be admitted of in the distance of echoes according to time and place.

When experiments of this sort are making, it should always be remembered that weather and the time of day have a vast influence on an echo; for a dull, heavy, moist air deadens and clogs the sound; and hot sunshine renders the air thin and weak, and deprives it of all it's springiness; and a ruffling wind quite defeats the whole. In a still, clear, dewy evening the air is most elastic; and perhaps the later the hour the more so.[1]

Echo has always been so amusing to the imagination, that the poets have personified her; and in their hands she has been the occasion of many a beautiful fiction. Nor need the gravest man be ashamed to appear taken with such a phænomenon, since it may become the subject of philosophical or mathematical inquiries.

One should have imagined that echoes, if not entertaining, must at least have been harmless and inoffensive; yet *Virgil* advances a strange notion, that they are injurious to bees. After enumerating some probable and reasonable annoyances, such as prudent owners would wish far removed from their bee-gardens, he adds

"— — — — — — aut ubi concava pulsu
"Saxa sonant, vocisque offensa resultat imago."[2]

This wild and fanciful assertion will hardly be admitted by the philosophers of these days; especially as they all now seem agreed that insects are not furnished with any organs of hearing at all.[3] But if it should be urged, that though they cannot *hear* yet perhaps they may *feel* the repercussions of sounds, I grant it is possible they may. Yet that these impressions are distasteful or hurtful, I deny, because bees, in good summers, thrive well in my outlet, where the echoes are very strong: for this village is

[1] [Tyndall's experiments have shown that there is no connection between a clear atmosphere and ready transmission of sound. Rain, hail, snow and fog have no power to obstruct sound, but "acoustic clouds," due to differences of heat or water-vapour, may render days of extraordinary optical transparency days of equally extraordinary acoustic opacity. (*Lectures on Sound*: Lecture VII.).]

[2] [*Georgics*, iv., 19.]

[3] [It is now known that certain insects possess elaborate organs of hearing. The experimental proof that they are really concerned with the perception of sound is particularly clear in the case of the male gnat, where the organ is lodged in an enlarged joint at the base of the antenna. Auditory organs have also been described in the forelegs of crickets and grasshoppers, as well as in the first abdominal segment of locusts.]

another *Anathoth*, a place of *responses* or *echoes*. Besides, it does not appear from experiment that bees are in any way capable of being affected by sounds: for I have often tried my own with a large speaking-trumpet held close to their hives, and with such an exertion of voice as would have hailed a ship at the distance of a mile, and still these insects pursued their various employments undisturbed, and without shewing the least sensibility or resentment.

Some time since it's discovery this echo is become totally silent, though the object, or hop-kiln, remains: nor is there any mystery in this defect; for the field between is planted as an hop-garden, and the voice of the speaker is totally absorbed and lost among the poles and entangled foliage of the hops. And when the poles are removed in autumn the disappointment is the same; because a tall quick-set hedge, nurtured up for the purpose of shelter to the hop ground, entirely interrupts the impulse and repercussion of the voice: so that till those obstructions are removed no more of it's garrulity can be expected.

Should any gentleman of fortune think an echo in his park or outlet a pleasing incident, he might *build* one at little or no expense. For whenever he had occasion for a new barn, stable, dog-kennel, or the like structure, it would be only needful to erect this building on the gentle declivity of an hill, with a like rising opposite to it, at a few hundred yards distance; and perhaps success might be the easier ensured could some canal, lake, or stream, intervene. From a seat at the *centrum phonicum* he and his friends might amuse themselves sometimes of an evening with the prattle of this loquacious nymph; of whose complacency and decent reserve more may be said than can with truth of every individual of her sex; since she is — — — —

"— — — — — — quæ nec *reticere* loquenti,
"Nec *prior* ipsa *loqui* didicit resonabilis echo."[1]

I am, &c.

P.S. The classic reader will, I trust, pardon the following lovely quotation, so finely describing echoes, and so poetically accounting for their causes from popular superstition:

"Quæ benè quom videas, rationem reddere possis
"Tute tibi atque aliis, quo pacto per loca sola
"Saxa pareis formas verborum ex ordine reddant,

[1] [Ov., *Met.*, iii., 357-58.]

"Palanteis comites quom monteis inter opacos
"Quærimus, et magnâ dispersos voce ciemus.
"Sex etiam, aut septem loca vidi reddere voces
"Unam quom jaceres: ita colles collibus ipsis
"Verba repulsantes iterabant dicta referre.
"Hæc loca capripedes Satyros, Nymphasque tenere
"Finitimi fingunt, et Faunos esse loquuntur;
"Quorum noctivago strepitu, ludoque jocanti
"Adfirmant volgo taciturna silentia rumpi,
"Chordarumque sonos fieri, dulceisque querelas,
"Tibia quas fundit digitis pulsata canentum:
"Et genus agricolûm latè sentiscere, quom Pan
"Pinea semiferi capitis velamina quassans,
"Unco sæpe labro calamos percurrit hianteis,
"Fistula silvestrem ne cesset fundere musam."

Lucretius, Lib. iv., l. 576.

LETTER XXXIX.

TO THE SAME.

Selborne, May 13, 1778.

DEAR SIR,

AMONG the many singularities attending those amusing birds the *swifts*, I am now confirmed in the opinion that we have every year the same number of pairs invariably; at least the result of my inquiry has been exactly the same for a long time past. The swallows and martins are so numerous, and so widely distributed over the village, that it is hardly possible to recount them; while the swifts, though they do not all build in the church, yet so frequently haunt it, and play and rendezvous round it, that they are easily enumerated. The number that I constantly find are *eight pairs;* about half of which reside in the church, and the rest build in some of the lowest and meanest thatched cottages. Now as these eight pairs, allowance being made for accidents, breed yearly eight pairs more, what becomes annually of this increase; and what determines every spring which pairs shall visit us, and reoccupy their ancient haunts?

Ever since I have attended to the subject of ornithology, I have always supposed that that sudden reverse of affection, that strange *αντιστοργη*, which immediately succeeds in the feathered kind to the most passionate fondness, is the occasion of an equal dispersion of birds over the face of the earth. Without this provision one favourite district would be crowded with inhabitants, while others would be destitute and forsaken. But the parent birds seem to maintain a jealous superiority, and to oblige

the young to seek for new abodes: and the rivalry of the males, in many kinds, prevents their crowding the one on the other. Whether the swallows and house-martins return in the same exact number annually is not easy to say, for reasons given above: but it is apparent, as I have remarked before in my Monographies, that the numbers returning bear no manner of proportion to the numbers retiring.

LETTER XL.

TO THE SAME.

Selborne, June 2, 1778.

DEAR SIR,

THE standing objection to botany has always been, that it is a pursuit that amuses the fancy and exercises the memory, without improving the mind or advancing any real knowledge: and where the science is carried no farther than a mere systematic classification, the charge is but too true. But the botanist that is desirous of wiping off this aspersion should be by no means content with a list of names; he should study plants philosophically, should investigate the laws of vegetation, should examine the powers and virtues of efficacious herbs, should promote their cultivation; and graft the gardener, the planter, and the husbandman, on the phytologist. Not that system is by any means to be thrown aside; without system the field of Nature would be a pathless wilderness; but system should be subservient to, not the main object of, pursuit.

Vegetation is highly worthy of our attention; and in itself is of the utmost consequence to mankind, and productive of many of the greatest comforts and elegancies of life. To plants we owe timber, bread, beer, honey, wine, oil, linen, cotton, &c., what not only strengthens our hearts, and exhilarates our spirits, but what secures from inclemencies of weather and adorns our persons. Man, in his true state of nature, seems to be subsisted by spontaneous vegetation: in middle climes, where grasses prevail, he mixes some animal food with the produce of the field and garden: and it is towards the polar extremes only that, like his kindred bears and wolves, he gorges himself with flesh alone, and is driven, to what hunger has never been known to compel the very beasts, to prey on his own species.[1]

[1] See the late Voyages to the South-seas.

The productions of vegetation have had a vast influence on the commerce of nations, and have been the great promoters of navigation, as may be seen in the articles of sugar, tea, tobacco, opium, ginseng, betel, paper, &c. As every climate has its peculiar produce, our natural wants bring on a mutual intercourse; so that by means of trade each distant part is supplied with the growth of every latitude. But, without the knowledge of plants and their culture, we must have been content with our hips and haws, without enjoying the delicate fruits of *India* and the salutiferous drugs of *Peru*.

Instead of examining the minute distinctions of every various species of each obscure genus, the botanist should endeavour to make himself acquainted with those that are useful. You shall see a man readily ascertain every herb of the field, yet hardly know wheat from barley, or at least one sort of wheat or barley from another.

But of all sorts of vegetation the *grasses* seem to be most neglected;[1] neither the farmer nor the grazier seem to distinguish the annual from the perennial, the hardy from the tender, nor the succulent and nutritive from the dry and juiceless.

The study of grasses would be of great consequence to a northerly, and grazing kingdom. The botanist that could improve the swerd of the district where he lived would be an useful member of society: to raise a thick turf on a naked soil would be worth volumes of systematic knowledge; and he would be the best commonwealth's man that could occasion the growth of "*two blades of grass* where *one* alone was seen before".

I am, &c.

LETTER XLI.

TO THE SAME.

Selborne, July 3, 1778.

Dear Sir,

In a district so diversified with such a variety of hill and dale, aspects, and soils, it is no wonder that great choice of plants

[1] [Even in White's day the importance of a scientific knowledge of grasses had been recognised. Gahn published in the *Amœnitates Academicæ* (1767), under the direction of Linnæus, an account of the common grasses, with mention of the writers who had studied the order. The subject has since received much attention.]

should be found. Chalks, clays, sands, sheep-walks and downs, bogs, heaths, woodlands, and champaign fields, cannot but furnish an ample *Flora*. The deep rocky lanes abound with *filices*, and the pastures and moist woods with *fungi*. If in any branch of botany we may seem to be wanting, it must be in the large aquatic plants, which are not to be expected on a spot far removed from rivers, and lying up amidst the hill country at the spring heads. To enumerate all the plants that have been discovered within our limits would be a needless work; but a short list of the more rare, and the spots where they are to be found, may be neither unacceptable nor unentertaining:—

Helleborus fœtidus, stinking hellebore, bear's foot, or setterwort,—all over the *High-wood* and *Coney-croft-hanger*: this continues a great branching plant the winter through, blossoming about *January*, and is very ornamental in shady walks and shrubberies. The good women give the leaves powdered to children troubled with worms; but it is a violent remedy, and ought to be administered with caution.

Helleborus viridis, green hellebore,—in the deep stony lane on the left hand just before the turning to *Norton-farm*, and at the top of *Middle Dorton* under the hedge: this plant dies down to the ground early in autumn, and springs again about *February*, flowering almost as soon as it appears above ground.

Vaccinium oxycoccos, creeping bilberries, or cranberries,—in the bogs of *Bin's-pond*;

Vaccinium myrtillus, whortle, or bilberries,—on the dry hillocks of *Wolmer-forest*;

Drosera rotundifolia, round-leaved sundew. } In the bogs of
——— *longifolia*, long-leaved ditto. } *Bin's-pond*.

Comarum palustre, purple comarum, or marsh cinque foil,—in the bogs of *Bin's-pond*;

Hypericum androsœmum, Tutsan, St. John's Wort,—in the stony, hollow lanes;

Vinca minor, less periwinkle,—in *Selborne-hanger* and *Shrub-wood*;

Monotropa hypopithys, yellow monotropa, or bird's nest,—in *Selborne-hanger* under the shady beeches, to whose roots it seems to be parasitical—at the north-west end of the *Hanger*;

Chlora perfoliata, *Blackstonia perfoliata*, *Hudsoni*, perfoliated yellow-wort,—on the banks in the *King's-field*;

Paris quadrifolia, herb Paris, true-love, or one-berry,—in the *Church-litten-coppice*;

Chrysosplenium oppositifolium, opposite golden saxifrage,—in the dark and rocky hollow lanes ;

Gentiana amarella, autumnal gentian, or fellwort,—on the *Zig-zag* and *Hanger ;*

Lathræa squammaria, tooth-wort,—in the *Church-litten-coppice* under some hazels near the foot-bridge, in *Trimming's* garden-hedge, and on the dry wall opposite *Grange-yard ;*

Dipsacus pilosus, small teasel,—in the *Short* and *Long Lith ;*

Lathyrus sylvestris, narrow-leaved, or wild lathyrus,—in the bushes at the foot of the *Short Lith,* near the path ;

Ophrys spiralis, ladies traces,—in the *Long Lith,* and towards the south corner of the common ;

Ophrys nidus avis, birds' nest ophrys,—in the *Long Lith* under the shady beeches among the dead leaves ; in *Great Dorton* among the bushes, and on the *Hanger* plentifully ;

Serapias latifolia, helleborine,—in the *High-wood* under the shady beeches ;

Daphne laureola, spurge laurel,—in *Selborne-Hanger* and the *High-wood ;*

Daphne mezereum, the mezereon,—in *Selborne-Hanger* among the shrubs at the south-east end above the cottages ;

Lycoperdon tuber, truffles,—in the *Hanger* and *High-wood ;*

Sambucus ebulus, dwarf elder, wallwort, or danewort,—among the rubbish and ruined foundations of the *Priory.*[1]

Of all the propensities of plants none seem more strange than their different periods of blossoming. Some produce their flowers in the winter, or very first dawnings of spring ; many when the spring is established ; some at midsummer, and some not till autumn. When we see the *helleborus fœtidus* and *helleborus niger* blowing at Christmas, the *helleborus hyemalis*[2] in January, and the *helleborus viridis* as soon as ever it emerges out of the ground, we do not wonder, because they are kindred plants that we expect should keep pace the one with the other. But other congenerous vegetables differ so widely in their time of flowering that we cannot but admire. I shall only instance at present in the *crocus sativus,* the vernal, and the autumnal crocus, which have such an affinity, that the best botanists only make them varieties of the same *genus,* of which there is only one *species ;* not being able to discern any difference in the *corolla,* or in the

[1] [The rest of this letter was given in the original edition as an appendix, and printed at the end of the Antiquities.]

[2] [The Eranthis of our gardens.]

internal structure.[1] Yet the *vernal crocus* expands it's flowers by the beginning of March at farthest, and often in very rigorous weather; and cannot be retarded but by some violence offered:— while the *autumnal* (the *Saffron*) defies the influence of the spring and summer, and will not blow till most plants begin to fade and run to seed. This circumstance is one of the wonders of the creation, little noticed, because a common occurrence: yet ought not to be overlooked on account of it's being familiar, since it would be as difficult to be explained as the most stupendous phænomenon in nature.

"Say, what impels, amidst surrounding snow
Congeal'd, the *crocus'* flamy bud to glow?
Say, what retards, amidst the summer's blaze,
Th' *autumnal bulb*, till pale, declining days?
The GOD of SEASONS; whose pervading power
Controls the sun, or sheds the fleecy shower:
He bids each flower his quick'ning word obey;
Or to each lingering bloom enjoins delay."

LETTER XLII.

TO THE SAME.

"Omnibus animalibus reliquis certus et uniusmodi, et in suo cuique genere "incessus est: aves solæ vario meatu feruntur, et in terrâ, et in æere."

PLIN., Hist. Nat., lib. x., cap. 38.

Selborne, Aug. 7, 1778.

DEAR SIR,

A GOOD ornithologist should be able to distinguish birds by their air as well as by their colours and shape; on the ground as well as on the wing, and in the bush as well as in the hand. For, though it must not be said that every *species* of birds has a manner peculiar to itself, yet there is somewhat in most *genera* at least, that at first sight discriminates them, and enables a judicious observer to pronounce upon them with some certainty. Put a bird in motion

"— — Et vera incessu patuit — — — —."

[1] [White's vernal crocus is probably *C. vernus*, and his autumnal crocus *C. sativus*. The inner spathe consists of two leaves in *sativus*, while it is single and tubular in *vernus*.]

Thus *kites* and *buzzards* sail round in circles with wings expanded and motionless; and it is from their gliding manner that the former are still called in the north of *England gleads,* from the *Saxon* verb *glidan,* to glide. The *kestrel,* or *wind-hover,* has a peculiar mode of hanging in the air in one place, his wings all the while being briskly agitated. *Hen-harriers* fly low over heaths or fields of corn, and beat the ground regularly like a pointer or setting-dog. *Owls* move in a buoyant manner, as if lighter than the air; they seem to want ballast. There is a peculiarity belonging to *ravens* that must draw the attention even of the most incurious—they spend all their leisure time in striking and cuffing each other on the wing in a kind of playful skirmish; and, when they move from one place to another, frequently turn on their backs with a loud croak, and seem to be falling to the ground. When this odd gesture betides them, they are scratching themselves with one foot, and thus lose the center of gravity. *Rooks* sometimes dive and tumble in a frolicksome manner; *crows* and *daws* swagger in their walk; *wood-peckers* fly *volatu undoso,* opening and closing their wings at every stroke, and so are always rising or falling in curves. All of this genus use their tails, which incline downward, as a support while they run up trees. *Parrots,* like all other hooked-clawed birds, walk aukwardly, and make use of their bill as a third foot, climbing and ascending with ridiculous caution. All the *gallinæ* parade and walk gracefully, and run nimbly; but fly with difficulty, with an impetuous whirring, and in a straight line. *Magpies* and *jays* flutter with powerless wings, and make no dispatch; *herons* seem incumbered with too much sail for their light bodies; but these vast hollow wings are necessary in carrying burdens, such as large fishes, and the like; *pigeons,* and particularly the sort called *smiters,* have a way of clashing their wings the one against the other over their backs with a loud snap; another variety called *tumblers* turn themselves over in the air. Some birds have movements peculiar to the season of love: thus *ring-doves,* though strong and rapid at other times, yet in the spring hang about on the wing in a toying and playful manner; thus the *cock-snipe,* while breeding, forgetting his former flight, fans the air like the wind-hover; and the *green-finch* in particular exhibits such languishing and faultering gestures as to appear like a wounded and dying bird; the *king-fisher* darts along like an arrow; *fern-owls,* or *goat-suckers,* glance in the dusk over the tops of trees like a meteor; *starlings* as it were swim

along, while *missel-thrushes* use a wild and desultory flight; *swallows* sweep over the surface of the ground and water, and distinguish themselves by rapid turns and quick evolutions; *swifts* dash round in circles; and the *bank-martin* moves with frequent vacillations like a butterfly. Most of the small birds fly by jerks, rising and falling as they advance. Most small birds hop; but *wagtails* and *larks* walk, moving their legs alternately. *Skylarks* rise and fall perpendicularly as they sing; *woodlarks* hang poised in the air; and *titlarks* rise and fall in large curves, singing in their descent. The *white-throat* uses odd jerks and gesticulations over the tops of hedges and bushes. All the *duck-kind* waddle; *divers* and *auks* walk as if fettered, and stand erect on their tails: these are the *compedes* of *Linnæus*. *Geese* and *cranes*, and most wild-fowls, move in figured flights, often changing their position. The secondary *remiges*[1] of *Tringæ*, *wild-ducks*, and some others, are very long, and give their wings, when in motion, an hooked appearance. *Dabchicks*, *moor-hens*, and *coots*, fly erect, with their legs hanging down, and hardly make any dispatch; the reason is plain, their wings are placed too forward out of the true centre of gravity; as the legs of *auks* and *divers* are situated too backward.

LETTER XLIII.

TO THE SAME.

Selborne, Sept. 9, 1778.

Dear Sir,

From the motion of birds, the transition is natural enough to their notes and language, of which I shall say something. Not that I would pretend to understand their language like the *vizier;* who, by the recital of a conversation which passed between two owls, reclaimed a sultan,[2] before delighting in conquest and devastation; but I would be thought only to mean that many of the winged tribes have various sounds and voices adapted to express their various passions, wants, and feelings; such as anger, fear, love, hatred, hunger, and the like. All species are not equally eloquent; some are copious and fluent

[1] [These are the *inner* secondaries, or tertials, as they were formerly called, which are long in these birds; the true secondaries are short.]

[2] See Spectator, Vol. vii., No. 512.

as it were in their utterance, while others are confined to a few important sounds: no bird, like the fish kind, is quite mute, though some are rather silent. The language of birds is very ancient, and, like other ancient modes of speech, very elliptical; little is said, but much is meant and understood.

The notes of the eagle-kind are shrill and piercing; and about the season of nidification much diversified, as I have been often assured by a curious observer of Nature, who long resided at *Gibraltar*, where eagles abound. The notes of our *hawks* much resemble those of the king of birds. *Owls* have very expressive notes; they hoot in a fine vocal sound, much resembling the *vox humana*, and reducible by a pitch-pipe to a musical key. This note seems to express complacency and rivalry among the males: they use also a quick call and an horrible scream; and can snore and hiss when they mean to menace. *Ravens*, besides their loud croak, can exert a deep and solemn note that makes the woods to echo; the amorous sound of a *crow* is strange and ridiculous; *rooks*, in the breeding season, attempt sometimes in the gaiety of their hearts to sing, but with no great success; the *parrot*-kind have many modulations of voice, as appears by their aptitude to learn human sounds; *doves* coo in an amorous and mournful manner, and are emblems of despairing lovers; the *woodpecker* sets up a sort of loud and hearty laugh; the *fern-owl*, or *goat-sucker*, from the dusk till day-break, serenades his mate with the clattering of castanets. All the tuneful *passeres* express their complacency by sweet modulations, and a variety of melody. The *swallow*, as has been observed in a former letter, by a shrill alarm bespeaks the attention of the other *hirundines*, and bids them be aware that the hawk is at hand. Aquatic and gregarious birds, especially the nocturnal, that shift their quarters in the dark, are very noisy and loquacious; as cranes, wild-geese, wild-ducks, and the like: their perpetual clamour prevents them from dispersing and losing their companions.

In so extensive a subject, sketches and outlines are as much as can be expected; for it would be endless to instance in all the infinite variety of the feathered nation. We shall therefore confine the remainder of this letter to the few domestic fowls of our yards, which are most known, and therefore best understood. At first the *peacock*, with his gorgeous train, demands our attention; but, like most of the gaudy birds, his notes are grating and shocking to the ear: the yelling of cats, and the braying of an ass, are not more disgustful. The voice of the *goose* is trumpet-

like, and clanking; and once saved the Capitol at *Rome*, as grave historians assert: the hiss also of the *gander* is formidable and full of menace, and "protective of his young". Among *ducks* the sexual distinction of voice is remarkable; for, while the *quack* of the female is loud and sonorous, the voice of the *drake* is inward and harsh, and feeble, and scarce discernible. The cock *turkey* struts and gobbles to his mistress in a most uncouth manner; he hath also a pert and petulant note when he attacks his adversary. When a hen *turkey* leads forth her young brood she keeps a watchful eye; and if a bird of prey appear, though ever so high in the air, the careful mother announces the enemy with a little inward moan, and watches him with a steady and attentive look; but, if he approach, her note becomes earnest and alarming, and her outcries are redoubled.

No inhabitants of a yard seem possessed of such a variety of expression and so copious a language as common poultry. Take a chicken of four or five days old, and hold it up to a window where there are flies, and it will immediately seize it's prey, with little twitterings of complacency; but if you tender it a wasp or a bee, at once it's note becomes harsh, and expressive of disapprobation and a sense of danger. When a pullet is ready to lay she intimates the event by a joyous and easy soft note. Of all the occurrences of their life that of *laying* seems to be the most important; for no sooner has a hen disburdened herself, than she rushes forth with a clamorous kind of joy, which the cock and the rest of his mistresses immediately adopt. The tumult is not confined to the family concerned, but catches from yard to yard, and spreads to every homestead within hearing, till at last the whole village is in an uproar. As soon as a hen becomes a mother her new relation demands a new language; she then runs clocking and screaming about, and seems agitated as if possessed. The father of the flock has also a considerable vocabulary; if he finds food, he calls a favourite concubine to partake; and if a bird of prey passes over, with a warning voice he bids his family beware. The gallant *chanticleer* has, at command, his amorous phrases, and his terms of defiance. But the sound by which he is best known is his *crowing*: by this he has been distinguished in all ages as the countryman's clock or larum, as the watchman that proclaims the divisions of the night. Thus the poet elegantly stiles him:

> "— — — the crested cock, whose clarion sounds
> "The silent hours." [1]

[1] [*Paradise Lost*, vii., 443-44.]

A neighbouring gentleman one summer had lost most of his chickens by a sparrow-hawk, that came gliding down between a faggot pile and the end of his house to the place where the coops stood. The owner, inwardly vexed to see his flock thus diminishing, hung a setting net adroitly between the pile and the house, into which the caitiff dashed, and was entangled. Resentment suggested the law of retaliation; he therefore clipped the hawk's wings, cut off his talons, and, fixing a cork on his bill, threw him down among the brood-hens. Imagination cannot paint the scene that ensued; the expressions that fear, rage, and revenge, inspired, were new, or at least such as had been unnoticed before: the exasperated matrons upbraided, they execrated, they insulted, they triumphed. In a word, they never desisted from buffeting their adversary till they had torn him in an hundred pieces.

LETTER XLIV.

TO THE SAME.

Selborne.

" — — — — monstrent
" — — — — —
" Quid tantùm Oceano properent se tingere soles
" Hyberni; vel quæ tardis mora noctibus obstet." [1]

GENTLEMEN who have outlets [2] might contrive to make ornament subservient to utility: a pleasing eye-trap might also contribute to promote science: an obelisk in a garden or park might be both an embellishment and an *heliotrope.*

Any person that is curious, and enjoys the advantage of a good horizon, might, with little trouble, make two *heliotropes;* the one for the *winter,* the other for the *summer* solstice: and these two erections might be constructed with very little expense; for two pieces of timber frame-work, about ten or twelve feet high, and four feet broad at the base, and close lined with plank, would answer the purpose.

The erection for the former should, if possible, be placed within sight of some window in the common sitting parlour; because

[1] [Virg., *Georg.*, ii., 481-82.]
[2] [*Outlet* is a favourite word with White in his letters to denote a garden or park belonging to a house. Apparently the word originally meant *prospect.*]

men, at that dead season of the year, are usually within doors at the close of the day; while that for the latter might be fixed for any given spot in the garden or outlet: whence the owner might contemplate, in a fine summer's evening, the utmost extent that the sun makes to the *northward* at the season of the longest days. Now nothing would be necessary but to place these two *objects* with so much exactness, that the *westerly* limb of the sun, at setting, might but just clear the *winter heliotrope* to the *west* of it on the *shortest* day; and that the *whole* disc of the sun, at the *longest* day, might exactly at setting also clear the *summer heliotrope* to the *north* of it.[1]

By this simple expedient it would soon appear that there is no such thing, strictly speaking, as a solstice; for, from the *shortest* day, the owner would, every clear evening, see the disc *advancing*, at it's setting, to the *westward* of the object; and, from the *longest* day, observe the sun *retiring* backwards every evening at it's setting, towards the object *westward*, till, in a few nights, it would set quite behind it, and so by degrees to the *west* of it: for when the sun comes near the summer solstice, the whole disc of it would at first set behind the object; after a time the *northern* limb would first appear, and so every night gradually more, till at length the whole diameter would set *northward* of it for about three nights; but on the middle night of the three, sensibly more remote than the former or following. When beginning it's recess from the summer tropic, it would continue more and more to be hidden every night, till at length it would descend quite behind the object again; and so nightly more and more to the *westward*.

[1] [No one, it is likely, has ever made heliotropes on White's plan. A surveying or prismatic compass, a theodolite, glass screens (such as windows) suitably marked, or two vertical rods temporarily fixed in the ground, would do as well as an ugly timber frame. White does not explain why his winter heliotrope is to all but hide the sun at setting, while his summer heliotrope is to hide none of it. The arrangement which is best in one case would also be best in the other.]

LETTER XLV.

TO THE SAME.

Selborne.

"— — — Mugire videbis
"Sub pedibus terram, et descendere montibus ornos." [1]

When I was a boy I used to read, with astonishment and implicit assent, accounts in *Baker's Chronicle* of walking hills and travelling mountains. *John Philips*, in his *Cyder*, alludes to the credit that was given to such stories with a delicate but quaint vein of humour peculiar to the author of the *Splendid Shilling*.

"I nor advise, nor reprehend the choice
"Of *Marcley Hill*; the apple no where finds
"A kinder mould; yet 'tis unsafe to trust
"Deceitful ground: who knows but that once more
"This mount may journey, and his present site
"Forsaken, to thy neighbour's bounds transfer
"Thy goodly plants, affording matter strange
"For law debates!"

But, when I came to consider better, I began to suspect that though our hills may never have journeyed far, yet that the ends of many of them have slipped and fallen away at distant periods, leaving the cliffs bare and abrupt. This seems to have been the case with *Nore* and *Whetham Hills*; and especially with the ridge between *Harteley Park* and *Ward le ham*, where the ground has slid into vast swellings and furrows; and lies still in such romantic confusion as cannot be accounted for from any other cause. A strange event, that happened not long since, justifies our suspicions; which, though it befell not within the limits of this parish, yet as it was within the hundred of *Selborne*, and as the circumstances were singular, may fairly claim a place in a work of this nature.

The months of *January* and *February*, in the year 1774, were remarkable for great melting snows and vast gluts of rain, so that by the end of the latter month the land-springs, or *lavants*, began to prevail, and to be near as high as in the memorable winter of 1764. The beginning of *March* also went on in the same tenor; when, in the night between the 8th and 9th of that month, a

[1] [Virg., *Æn.*, iv., 490-91.]

considerable part of the great woody hanger at *Hawkley*[1] was torn from it's place, and fell down, leaving a high free-stone cliff naked and bare, and resembling the steep side of a chalk-pit. It appears that this huge fragment, being perhaps sapped and undermined by waters, foundered, and was engulfed, going down in a perpendicular direction; for a gate which stood in the field, on the top of the hill, after sinking with it's posts for thirty or forty feet, remained in so true and upright a position as to open and shut with great exactness, just as in it's first situation. Several oaks also are still standing, and in a state of vegetation, after taking the same desperate leap. That great part of this prodigious mass was absorbed in some gulf below, is plain also from the inclining ground at the bottom of the hill, which is free and unincumbered; but would have been buried in heaps of rubbish, had the fragment parted and fallen forward. About an hundred yards from the foot of this hanging coppice stood a cottage by the side of a lane; and two hundred yards lower, on the other side of the lane, was a farm-house, in which lived a labourer and his family; and, just by, a stout new barn. The cottage was inhabited by an old woman and her son, and his wife. These people in the evening, which was very dark and tempestuous, observed that the brick floors of their kitchens began to heave and part; and that the walls seemed to open, and the roofs to crack: but they all agree that no tremor of the ground, indicating an earthquake, was ever felt; only that the wind continued to make a most tremendous roaring in the woods and hangers. The miserable inhabitants, not daring to go to bed, remained in the utmost solicitude and confusion, expecting every moment to be buried under the ruins of their shattered edifices. When day-light came they were at leisure to contemplate the devastations of the night: they then found that a deep rift, or chasm, had opened under their houses, and torn them, as it were, in two; and that one end of the barn had suffered in a similar manner; that a pond near the cottage had undergone a strange reverse, becoming deep at the shallow end, and so *vice versa;* that many large oaks were removed out of their perpendicular, some thrown down, and some fallen into the heads of neighbouring trees; and that a gate was thrust forward, with

[1] [Hawkley is about three miles south of Selborne. Hawkley Hanger had once belonged to Gilbert White's father.—(*Bell.*) Here, as between Hartley Park and Worldham, the freestone is underlain by the clay of the gault, which has proved an insufficient support.]

it's hedge, full six feet, so as to require a new track to be made to it. From the foot of the cliff the general course of the ground, which is pasture, inclines in a moderate descent for half a mile, and is interspersed with some hillocks, which were rifted, in every direction, as well towards the great woody hanger, as from it. In the first pasture the deep clefts began; and running across the lane, and under the buildings, made such vast shelves that the road was impassable for some time; and so over to an arable field on the other side, which was strangely torn and disordered. The second pasture field, being more soft and springy, was protruded forward without many fissures in the turf, which was raised in long ridges resembling graves, lying at right angles to the motion. At the bottom of this enclosure the soil and turf rose many feet against the bodies of some oaks that obstructed their farther course and terminated this awful commotion.

The perpendicular height of the precipice, in general, is twenty-three yards; the length of the lapse, or slip, as seen from the fields below, one hundred and eighty-one; and a partial fall, concealed in the coppice, extends seventy yards more: so that the total length of this fragment that fell was two hundred and fifty-one yards. About fifty acres of land suffered from this violent convulsion; two houses were entirely destroyed; one end of a new barn was left in ruins, the walls being cracked through the very stones that composed them; a hanging coppice was changed to a naked rock; and some grass grounds and an arable field so broken and rifted by the chasms as to be rendered, for a time, neither fit for the plough or safe for pasturage, till considerable labour and expense had been bestowed in levelling the surface and filling in the gaping fissures.

LETTER XLVI.

TO THE SAME.

Selborne.

"— — — resonant arbusta — — — —"

THERE is a steep abrupt pasture field interspersed with furze close to the back of this village, well known by the name of the *Short Lithe*, consisting of a rocky dry soil, and inclining to the afternoon sun. This spot abounds with the *gryllus campestris*, or

field-cricket; which, though frequent in these parts, is by no means a common insect in many other counties.

As their cheerful summer cry cannot but draw the attention of a naturalist, I have often gone down to examine the œconomy of these *grylli,* and study their mode of life: but they are so shy and cautious that it is no easy matter to get a sight of them; for, feeling a person's footsteps as he advances, they stop short in the midst of their song, and retire backward nimbly into their burrows, where they lurk till all suspicion of danger is over.

At first we attempted to dip them out with a spade, but without any great success; for either we could not get to the bottom of the hole, which often terminated under a great stone; or else, in breaking up the ground, we inadvertently squeezed the poor insect to death. Out of one so bruised we took a multitude of eggs, which were long and narrow, of a yellow colour, and covered with a very tough skin. By this accident we learned to distinguish the male from the female; the former of which is shining black, with a golden stripe across his shoulders; the latter is more dusky, more capacious about the abdomen, and carries a long sword-shaped weapon at her tail, which probably is the instrument with which she deposits her eggs in crannies and safe receptacles.

Where violent methods will not avail, more gentle means will often succeed; and so it proved in the present case; for, though a spade be too boisterous and rough an implement, a pliant stalk of grass, gently insinuated into the caverns, will probe their windings to the bottom, and quickly bring out the inhabitant; and thus the humane inquirer may gratify his curiosity without injuring the object of it. It is remarkable that, though these insects are furnished with long legs behind, and brawny thighs for leaping, like grasshoppers; yet when driven from their holes they show no activity, but crawl along in a shiftless manner, so as easily to be taken: and again, though provided with a curious apparatus of wings, yet they never exert them when there seems to be the greatest occasion. The males only make that shrilling noise perhaps out of rivalry and emulation, as is the case with many animals which exert some sprightly note during their breeding time: it is raised by a brisk friction of one wing against the other. They are solitary beings, living singly male or female, each as it may happen; but there must be a time when the sexes have some intercourse, and then the wings may be useful perhaps during the hours of night. When the males meet they will fight fiercely, as I found by some which I put into the crevices of a dry

stone wall, where I should have been glad to have made them settle. For though they seemed distressed by being taken out of their knowledge, yet the first that got possession of the chinks would seize on any that were obtruded upon them with a vast row of serrated fangs. With their strong jaws, toothed like the shears of a lobster's claws, they perforate and round their curious regular cells, having no fore-claws to dig, like the mole-cricket. When taken in hand I could not but wonder that they never offered to defend themselves, though armed with such formidable weapons. Of such herbs as grow before the mouths of their burrows they eat indiscriminately; and on a little platform, which they make just by, they drop their dung; and never, in the day time, seem to stir more than two or three inches from home. Sitting in the entrance of their caverns they chirp all night as well as day from the middle of the month of *May* to the middle of *July;* and in hot weather, when they are most vigorous, they make the hills echo; and, in the stiller hours of darkness, may be heard to a considerable distance. In the beginning of the season their notes are more faint and inward; but become louder as the summer advances, and so die away again by degrees.

Sounds do not always give us pleasure according to their sweetness and melody; nor do harsh sounds always displease. We are more apt to be captivated or disgusted with the associations which they promote, than with the notes themselves. Thus the shrilling of the *field-cricket*, though sharp and stridulous, yet marvellously delights some hearers, filling their minds with a train of summer ideas of every thing that is rural, verdurous, and joyous.

About the tenth of *March* the crickets appear at the mouths of their cells, which they then open and bore, and shape very elegantly. All that ever I have seen at that season were in their pupa state, and had only the rudiments of wings, lying under a skin or coat, which must be cast before the insect can arrive at it's perfect state;[1] from whence I should suppose that the old ones of last year do not always survive the winter. In *August* their holes begin to be obliterated, and the insects are seen no more till spring.

Not many summers ago I endeavoured to transplant a colony to the terrace in my garden, by boring deep holes in the sloping

[1] We have observed that they cast these skins in *April*, which are then seen lying at the mouths of their holes.

turf. The new inhabitants stayed some time, and fed and sung; but wandered away by degrees, and were heard at a farther distance every morning; so that it appears that on this emergency they made use of their wings in attempting to return to the spot from which they were taken.

One of these crickets, when confined in a paper cage and set in the sun, and supplied with plants moistened with water, will feed and thrive, and become so merry and loud as to be irksome in the same room where a person is sitting: if the plants are not wetted it will die.

LETTER XLVII.

TO THE SAME.

Selborne.

DEAR SIR,

"Far from all resort of mirth
"Save the cricket on the hearth." MILTON'S *Il Penseroso.*

WHILE many other insects must be sought after in fields and woods, and waters, the *gryllus domesticus*, or *house-cricket*, resides altogether within our dwellings, intruding itself upon our notice whether we will or no. This species delights in new-built houses, being, like the spider, pleased with the moisture of the walls; and besides, the softness of the mortar enables them to burrow and mine between the joints of the bricks or stones, and to open communications from one room to another. They are particularly fond of kitchens and bakers' ovens, on account of their perpetual warmth.

Tender insects that live abroad either enjoy only the short period of one summer, or else doze away the cold uncomfortable months in profound slumbers; but these, residing as it were in a torrid zone, are always alert and merry: a good *Christmas* fire is to them like the heats of the dog-days. Though they are frequently heard by day, yet is their natural time of motion only in the night. As soon as it grows dusk, the chirping increases, and they come running forth, and are from the size of a flea to that of their full stature. As one should suppose, from the burning atmosphere which they inhabit, they are a thirsty race, and show a great propensity for liquids, being found frequently drowned

in pans of water, milk, broth, or the like. Whatever is moist they affect: and therefore often gnaw holes in wet woollen stockings and aprons that are hung to the fire: they are the housewife's barometer, foretelling her when it will rain; and are prognostic sometimes, she thinks, of ill or good luck; of the death of a near relation, or the approach of an absent lover. By being the constant companions of her solitary hours they naturally become the objects of her superstition. These crickets are not only very thirsty, but very voracious; for they will eat the scummings of pots, and yeast, salt, and crumbs of bread; and any kitchen offal or sweepings. In the summer we have observed them to fly, when it became dusk, out of the windows, and over the neighbouring roofs. This feat of activity accounts for the sudden manner in which they often leave their haunts, as it does for the method by which they come to houses where they were not known before. It is remarkable, that many sorts of insects seem never to use their wings but when they have a mind to shift their quarters and settle new colonies. When in the air they move "*volatu undoso,*" in waves or curves, like *wood-peckers,* opening and shutting their wings at every stroke, and so are always rising or sinking.

When they increase to a great degree, as they did once in the house where I am now writing, they become noisome pests, flying into the candles, and dashing into people's faces; but may be blasted and destroyed by gunpowder discharged into their crevices and crannies. In families, at such times, they are, like Pharaoh's plague of frogs,—"in their bed-chambers, and upon their beds, "and in their ovens, and in their kneading-troughs".[1] Their shrilling noise is occasioned by a brisk attrition of their wings. Cats catch hearth-crickets, and, playing with them as they do with mice, devour them. Crickets may be destroyed, like wasps, by phials half filled with beer, or any liquid, and set in their haunts; for, being always eager to drink, they will crowd in till the bottles are full.

[1] Exod. viii. 3.

LETTER XLVIII.

TO THE SAME.

Selborne.

How diversified are the modes of life not only of incongruous but even of congenerous animals; and yet their specific distinctions are not more various than their propensities. Thus, while the *field-cricket* delights in sunny dry banks, and the *house-cricket* rejoices amidst the glowing heat of the kitchen hearth or oven, the *gryllus gryllo talpa* (the *mole-cricket*) haunts moist meadows, and frequents the sides of ponds and banks of streams, performing all it's functions in a swampy wet soil. With a pair of fore-feet, curiously adapted to the purpose, it burrows and works under ground like the mole, raising a ridge as it proceeds, but seldom throwing up hillocks.

As *mole-crickets* often infest gardens by the sides of canals, they are unwelcome guests to the gardener, raising up ridges in their subterraneous progress, and rendering the walks unsightly. If they take to the kitchen quarters, they occasion great damage among the plants and roots, by destroying whole beds of cabbages, young legumes, and flowers. When dug out they seem very slow and helpless, and make no use of their wings by day; but at night they come abroad, and make long excursions, as I have been convinced by finding stragglers, in a morning, in improbable places. In fine weather, about the middle of *April*, and just at the close of day, they begin to solace themselves with a low, dull, jarring note, continued for a long time without interruption, and not unlike the chattering of the fern-owl, or goat-sucker, but more inward.

About the beginning of *May* they lay their eggs, as I was once an eye-witness: for a gardener at an house, where I was on a visit, happening to be mowing, on the 6th of that month, by the side of a canal, his scythe struck too deep, pared off a large piece of turf, and laid open to view a curious scene of domestic œconomy:

> "— — — — ingentem lato dedit ore fenestram:
> "Apparet domus intus, et atria longa patescunt:
> "Apparent — — — penetralia."[1]

[1] [Virg., *Æn.*, ii., 482-84.]

There were many caverns and winding passages leading to a kind of chamber, neatly smoothed and rounded, and about the size of a moderate snuff-box. Within this secret nursery were deposited near an hundred eggs of a dirty yellow colour, and enveloped in a tough skin, but too lately excluded to contain any rudiments of young, being full of a viscous substance. The eggs lay but shallow, and within the influence of the sun, just under a little heap of fresh-moved mould, like that which is raised by ants.

When *mole-crickets* fly they move "*cursu undoso*," rising and falling in curves, like the other species mentioned before. In different parts of this kingdom people call them *fen-crickets, churr-worms,* and *eve-churrs,* all very apposite names.

Anatomists, who have examined the intestines of these insects, astonish me with their accounts; for they say that, from the structure, position, and number of their stomachs, or maws, there seems to be good reason to suppose that this and the two former species *ruminate* or *chew* the *cud* like many quadrupeds![1]

LETTER XLIX.

TO THE SAME.

Selborne, May 7, 1779.

It is now more than forty years that I have paid some attention to the ornithology of this district, without being able to exhaust the subject: new occurrences still arise as long as any inquiries are kept alive.

In the last week of last month five of those most rare birds, too uncommon to have obtained an *English* name, but known to naturalists by the terms of *himantopus,* or *loripes,* and *charadrius himantopus,*[2] were shot upon the verge of *Frinsham-pond,* a large lake belonging to the bishop of *Winchester,* and lying between *Wolmer-forest,* and the town of *Farnham,* in the county of *Surrey.* The pond keeper says there were three brace in the flock; but that, after he had satisfied his curiosity, he suffered the sixth to remain unmolested. One of these specimens I procured, and

[1] [The only foundation for the supposition that crickets and mole-crickets ruminate is that, like many other insects, they have a gizzard, set with hard ridges or teeth, behind the crop.]

[2] [The black-winged stilt, an uncommon visitor to this country.]

found the length of the legs to be so extraordinary, that, at first sight, one might have supposed the shanks had been fastened on to impose on the credulity of the beholder: they were legs in *caricatura;* and had we seen such proportions on a *Chinese* or *Japan* screen we should have made large allowances for the fancy of the draughtsman. These birds are of the *plover* family, and might with propriety be called the *stilt plovers. Brisson,* under that idea, gives them the apposite name of *l'échasse.* My specimen, when drawn and stuffed with pepper, weighed only four ounces and a quarter, though the *naked* part of the thigh measured three inches and an half, and the legs four inches and an half. Hence we may safely assert that these birds exhibit, weight for inches, incomparably the greatest length of legs of any known bird. The *flamingo,* for instance, is one of the most long legged birds, and yet it bears no manner of proportion to the *himantopus;* for a cock *flamingo* weighs, at an average, about four pounds avoirdupois; and his legs and thighs measure usually about twenty inches. But four pounds are fifteen times and a fraction more than four ounces and one quarter; and if four ounces and a quarter have eight inches of legs, four pounds must have one hundred and twenty inches and a fraction of legs; *viz.* somewhat more than ten feet; such a monstrous proportion as the world never saw![1] If you should try the experiment in still larger birds the disparity would still increase. It must be matter of great curiosity to see the *stilt plover* move; to observe how it can wield such a length of lever with such feeble muscles as the thighs seem to be furnished with. At best one should expect it to be but a bad walker: but what adds to the wonder is that it has no back toe. Now without that steady prop to support it's steps it must be liable, in speculation, to perpetual vacillations, and seldom able to preserve the true center of gravity.

The old name of *himantopus* is taken from *Pliny;* and, by an aukward metaphor, implies that the legs are as slender and pliant as if cut out of a *thong* of leather. Neither *Willughby* nor *Ray,* in all their curious researches, either at home or abroad, ever saw this bird. Mr. *Pennant* never met with it in all *Great-Britain,* but observed it often in the cabinets of the curious at *Paris. Hasselquist* says that it migrates to *Egypt* in the autumn:

[1] [There is an obvious miscalculation here, corrected in Bell's edition. The weight of similar structures varies as the cube of corresponding linear dimensions; White's comparison implies that it varies directly.]

and a most accurate observer of Nature has assured me that he has found it on the banks of the streams in *Andalusia.*

Our writers record it to have been found only twice in *Great Britain.* From all these relations it plainly appears that these long legged *plovers* are birds of *South Europe,* and rarely visit our island; and when they do are wanderers and stragglers, and impelled to make so distant and northern an excursion from motives or accidents for which we are not able to account. One thing may fairly be deduced, that these birds come over to us from the continent, since nobody can suppose that a species not noticed once in an age, and of such a remarkable make, can constantly breed unobserved in this kingdom.

LETTER L.

TO THE SAME.

Selborne, April 21, 1780.

DEAR SIR,

THE old *Sussex* tortoise,[1] that I have mentioned to you so often, is become my property. I dug it out of it's winter dormitory in *March* last, when it was enough wakened to express it's resentments by hissing; and, packing it in a box with earth, carried it eighty miles in post-chaises. The rattle and hurry of the journey so perfectly roused it that, when I turned it out on a border, it walked twice down to the bottom of my garden; however, in the evening, the weather being cold, it buried itself in the loose mould, and continues still concealed.

As it will be under my eye, I shall now have an opportunity of enlarging my observations on it's mode of life, and propensities; and perceive already that, towards the time of coming forth, it opens a breathing place in the ground near it's head, requiring, I conclude, a freer respiration, as it becomes more alive. This creature not only goes under the earth from the middle of *November* to the middle of *April,* but sleeps great part of the summer; for it goes to bed in the longest days at four in the afternoon, and often does not stir in the morning till late. Besides, it retires to rest for every shower; and does not move at all in wet days.

[1] [See Letters VII. and XIII. to Barrington.]

When one reflects on the state of this strange being, it is a matter of wonder to find that Providence should bestow such a profusion of days, such a seeming waste of longevity, on a reptile that appears to relish it so little as to squander more than two thirds of it's existence in a joyless stupor, and be lost to all sensation for months together in the profoundest of slumbers.

While I was writing this letter, a moist and warm afternoon, with the thermometer at 50, brought forth troops of *shell-snails;* and, at the same juncture, the *tortoise* heaved up the mould, and put out it's head; and the next morning came forth, as it were raised from the dead; and walked about till four in the afternoon. This was a curious coincidence! a very amusing occurrence! to see such a similarity of feelings between the two φερεοικοι! for so the *Greeks* call both the *shell-snail* and the *tortoise.*

Summer birds are, this cold and backward spring, unusually late: I have seen but one swallow yet. This conformity with the weather convinces me more and more that they sleep in the winter.

More Particulars *respecting the* Old Family Tortoise, *omitted in the* Natural History.[1]

Because we call this creature an abject reptile, we are too apt to undervalue his abilities, and depreciate his powers of instinct. Yet he is, as Mr. *Pope* says of his lord,

"— — — Much too wise to walk into a well:"

and has so much discernment as not to fall down an haha; but to stop and withdraw from the brink with the readiest precaution.

Though he loves warm weather he avoids the hot sun; because his thick shell, when once heated, would, as the poet says of solid armour—"scald with safety". He therefore spends the more sultry hours under the umbrella of a large cabbage-leaf, or amidst the waving forests of an asparagus-bed.

But as he avoids heat in the summer, so, in the decline of the year, he improves the faint autumnal beams, by getting within the reflection of a fruit-wall: and, though he never has read that planes inclining to the horizon receive a greater share of warmth,[2]

[1] [In the original edition this passage was printed at the end of the Antiquities.]

[2] Several years ago a book was written entitled "Fruit-walls improved by inclining them to the horizon": in which the author has shewn, by calculation, that a much greater number of the rays of the sun will fall on such walls than on those which are perpendicular.

he inclines his shell, by tilting it against the wall, to collect and admit every feeble ray.

Pitiable seems the condition of this poor embarrassed reptile: to be cased in a suit of ponderous armour, which he cannot lay aside; to be imprisoned, as it were, within his own shell, must preclude, we should suppose, all activity and disposition for enterprize. Yet there is a season of the year (usually the beginning of June) when his exertions are remarkable. He then walks on tiptoe, and is stirring by five in the morning; and, traversing the garden, examines every wicket and interstice in the fences, through which he will escape if possible: and often has eluded the care of the gardener, and wandered to some distant field. The motives that impel him to undertake these rambles seem to be of the amorous kind: his fancy then becomes intent on sexual attachments, which transport him beyond his usual gravity, and induce him to forget for a time his ordinary solemn deportment.

LETTER LI.

TO THE SAME.

Selborne, Sept. 3, 1781.

I HAVE now read your miscellanies through with much care and satisfaction; and am to return you my best thanks for the honourable mention made in them of me as a naturalist, which I wish I may deserve.

In some former letters I expressed my suspicions that many of the house-martins do not depart in the winter far from this village. I therefore determined to make some search about the south-east end of the hill, where I imagined they might slumber out the uncomfortable months of winter. But supposing that the examination would be made to the best advantage in the spring, and observing that no martins had appeared by the 11th of *April* last; on that day I employed some men to explore the shrubs and cavities of the suspected spot. The persons took pains, but without any success: however, a remarkable incident occurred in the midst of our pursuit—while the labourers were at work a house-martin, the first that had been seen this year, came down the village in the sight of several people, and went at once into a nest, where it stayed a short time, and then flew over the houses; for some days after no martins were observed,

not till the 16th of *April*, and then only a pair. Martins in general were remarkably late this year.

LETTER LII.

TO THE SAME.

Selborne, Sept. 9, 1781.

I HAVE just met with a circumstance respecting swifts, which furnishes an exception to the whole tenor of my observations ever since I have bestowed any attention on that species of hirundines. Our swifts, in general, withdrew this year about the first day of *August*, all save one pair, which in two or three days was reduced to a single bird. The perseverance of this individual made me suspect that the strongest of motives, that of an attachment to her young, could alone occasion so late a stay. I watched therefore till the twenty-fourth of *August*, and then discovered that, under the eaves of the church, she attended upon two young, which were fledged, and now put out their white chins from a crevice. These remained till the twenty-seventh, looking more alert every day, and seeming to long to be on the wing. After this day they were missing at once; nor could I ever observe them with their dam coursing round the church in the act of learning to fly, as the first broods evidently do. On the thirty-first I caused the eaves to be searched, but we found in the nest only two callow, dead, stinking swifts, on which a second nest had been formed. This double nest was full of the black shining cases of the *hippoboscæ hirundinis*.

The following remarks on this unusual incident are obvious. The first is, that though it may be disagreeable to swifts to remain beyond the beginning of *August*, yet that they can subsist longer is undeniable.[1] The second is, that this uncommon event, as it was owing to the loss of the first brood, so it corroborates my former remark, that swifts breed regularly but once; since, was the contrary the case, the occurrence above could neither be new nor rare.

P.S. One swift was seen at *Lyndon*, in the county of *Rutland*, in 1782, so late as the third of *September*.

[1] [It was a mere accident that White had seen no swifts later than the first week in August. They may be seen now and then all through August, and even in September, especially in the south.]

LETTER LIII.

TO THE SAME.

As I have sometimes known you make inquiries about several kinds of insects, I shall here send you an account of one sort which I little expected to have found in this kingdom. I had often observed that one particular part of a vine growing on the walls of my house was covered in the autumn with a black dust-like appearance, on which the flies fed eagerly; and that the shoots and leaves thus affected did not thrive; nor did the fruit ripen. To this substance I applied my glasses; but could not discover that it had any thing to do with animal life, as I at first expected: but, upon a closer examination behind the larger boughs, we were surprised to find that they were coated over with husky shells, from whose sides proceeded a cotton-like substance, surrounding a multitude of eggs. This curious and uncommon production put me upon recollecting what I have heard and read concerning the *coccus vitis viniferæ* of *Linnæus*, which, in the south of *Europe*, infests many vines, and is an horrid and loathsome pest. As soon as I had turned to the accounts given of this insect, I saw at once that it swarmed on my vine; and did not appear to have been at all checked by the preceding winter, which had been uncommonly severe.

Not being then at all aware that it had any thing to do with *England*, I was much inclined to think that it came from *Gibraltar* among the many boxes and packages of plants and birds which I had formerly received from thence; and especially as the vine infested grew immediately under my study-window, where I usually kept my specimens. True it is that I had received nothing from thence for some years: but as insects, we know, are conveyed from one country to another in a very unexpected manner, and have a wonderful power of maintaining their existence till they fall into a *nidus* proper for their support and increase, I cannot but suspect still that these *cocci* came to me originally from *Andalusia*. Yet, all the while, candour obliges me to confess that Mr. *Lightfoot* has written me word that he once, and but once, saw these insects on a vine at *Weymouth* in *Dorsetshire;* which, it is here to be observed, is a sea-port town to which the *coccus* might be conveyed by shipping.

As many of my readers may possibly never have heard of this

strange and unusual insect, I shall here transcribe a passage from a natural history of *Gibraltar*, written by the Reverend *John White*, late vicar of *Blackburn* in *Lancashire*, but not yet published:—

"In the year 1770, a vine, which grew on the east-side of my "house, and which had produced the finest crops of grapes for "years past, was suddenly overspread on all the woody branches "with large lumps of a white fibrous substance resembling spiders' "webs, or rather raw cotton. It was of a very clammy quality, "sticking fast to every thing that touched it, and capable of "being spun into long threads. At first I suspected it to be "the product of spiders, but could find none. Nothing was to "be seen connected with it but many *brown oval husky shells*, "which by no means looked like insects, but rather resembled "bits of the dry bark of the vine. The tree had a plentiful "crop of grapes set, when this pest appeared upon it; but the "fruit was manifestly injured by this foul incumbrance. It "remained all the summer, still increasing, and loaded the "woody and bearing branches to a vast degree. I often pulled "off great quantities by handfuls; but it was so slimy and "tenacious that it could by no means be cleared. The grapes "never filled to their natural perfection, but turned watery and "vapid. Upon perusing the works afterwards of M. de *Réaumur*,[1] "I found this matter perfectly described and accounted for. "Those husky shells, which I had observed, were no other than "the *female coccus*, from whose sides this cotton-like substance "exsudes, and serves as a covering and security for their eggs."

To this account I think proper to add, that, though the female *cocci* are stationary, and seldom remove from the place to which they stick, yet the male is a winged insect; and that the black dust which I saw was undoubtedly the excrement of the females, which is eaten by ants as well as flies. Though the utmost severity of our winter did not destroy these insects, yet the attention of the gardener in a summer or two has entirely relieved my vine from this filthy annoyance.

As we have remarked above that insects are often conveyed from one country to another in a very unaccountable manner, I shall here mention an emigration of small *aphides*, which was observed in the village of *Selborne* no longer ago than *August* the 1st, 1785.

[1] [*Hist. des Insectes*, vol. iv., tab. vi., figs. 5-7.]

At about three o'clock in the afternoon of that day, which was very hot, the people of this village were surprised by a shower of *aphides*, or *smother-flies*, which fell in these parts. Those that were walking in the street at that juncture found themselves covered with these insects, which settled also on the hedges and gardens, blackening all the vegetables where they alighted. My annuals were discoloured with them, and the stalks of a bed of onions were quite coated over for six days after. These armies were then, no doubt, in a state of emigration, and shifting their quarters; and might have come, as far as we know, from the great hop-plantations of *Kent* or *Sussex*, the wind being all that day in the easterly quarter. They were observed at the same time in great clouds about *Farnham*, and all along the vale from *Farnham* to *Alton*.[1]

LETTER LIV.[2]

TO THE SAME.

DEAR SIR,

WHEN I happen to visit a family where *gold* and *silver fishes* are kept in a glass bowl, I am always pleased with the occurrence, because it offers me an opportunity of observing the actions and propensities of those beings with whom we can be little acquainted in their natural state. Not long since I spent a fortnight at the house of a friend where there was such a *vivary*, to which I paid no small attention, taking every occasion to remark what passed within it's narrow limits. It was here that I first observed the manner in which fishes die. As soon as the creature sickens, the head sinks lower and lower, and it stands as it were on it's head; till, getting weaker, and losing all poise, the tail turns over, and at last it floats on the surface of the water with it's belly uppermost. The reason why fishes, when dead, swim in that manner is very obvious; because, when the body is no longer balanced by the fins of the belly, the broad muscular back preponderates by it's own gravity, and turns the belly uppermost, as lighter from it's being a cavity, and because it

[1] For various methods by which several insects shift their quarters, see *Derham*'s Physico-Theology.

[2] [First published in the *Gentleman's Magazine* for 1786 (vol. lvi., p. 488), with the date of June 12, and under the signature of V.—*Bennett.*]

contains the swimming-bladders, which contribute to render it buoyant. Some that delight in *gold* and *silver fishes* have adopted a notion that they need no aliment. True it is that they will subsist for a long time without any apparent food but what they can collect from pure water frequently changed; yet they must draw some support from animalcula, and other nourishment supplied by the water; because, though they seem to eat nothing, yet the consequences of eating often drop from them. That they are best pleased with such *jejune* diet may easily be confuted, since if you toss them crumbs they will seize them with great readiness, not to say greediness: however, bread should be given sparingly, lest, turning sour, it corrupt the water. They will also feed on the water-plant called *lemna* (*duck's meat*), and also on small fry.

When they want to move a little they gently protrude themselves with their *pinnæ pectorales;* but it is with their strong muscular tails only that they and all fishes shoot along with such inconceivable rapidity. It has been said that the eyes of fishes are immoveable: but these apparently turn them forward or backward in their sockets as their occasions require. They take little notice of a lighted candle, though applied close to their heads, but flounce and seem much frightened by a sudden stroke of the hand against the support whereon the bowl is hung; especially when they have been motionless, and are perhaps asleep. As fishes have no eyelids, it is not easy to discern when they are sleeping or not, because their eyes are always open.

Nothing can be more amusing than a glass bowl containing such fishes: the double refractions of the glass and water represent them, when moving, in a shifting and changeable variety of dimensions, shades, and colours; while the two mediums, assisted by the concavo-convex shape of the vessel, magnify and distort them vastly; not to mention that the introduction of another element and it's inhabitants into our parlours engages the fancy in a very agreeable manner.

Gold and *silver fishes*, though originally natives of *China* and *Japan*, yet are become so well reconciled to our climate as to thrive and multiply very fast in our ponds and stews. *Linnæus* ranks this species of fish under the genus of *cyprinus*, or *carp*, and calls it *cyprinus auratus*.

Some people exhibit this sort of fish in a very fanciful way; for they cause a glass bowl to be blown with a large hollow space within, that does not communicate with it. In this cavity they

put a bird occasionally; so that you may see a goldfinch or a linnet hopping as it were in the midst of the water, and the fishes swimming in a circle round it. The simple exhibition of the fishes is agreeable and pleasant; but in so complicated a way becomes whimsical and unnatural, and liable to the objection due to him,

"Qui variare cupit rem prodigialitèr unam." [1]

I am, &c.

LETTER LV.

TO THE SAME.

October 10, 1781.

DEAR SIR,

I THINK I have observed before that much the most considerable part of the *house-martins* withdraw from hence about the first week in *October;* but that some, the latter broods I am now convinced, linger on till towards the middle of that month: and that at times, once perhaps in two or three years, a flight, for one day only, has shown itself in the first week of *November.*

Having taken notice, in *October* 1780, that the last flight was numerous, amounting perhaps to one hundred and fifty; and that the season was soft and still; I was resolved to pay uncommon attention to these late birds; to find, if possible, where they roosted, and to determine the precise time of their retreat. The mode of life of these latter *hirundines* is very favourable to such a design; for they spend the whole day in the sheltered district, between me and the *Hanger,* sailing about in a placid, easy manner, and feasting on those insects which love to haunt a spot so secure from ruffling winds. As my principal object was to discover the place of their roosting, I took care to wait on them before they retired to rest, and was much pleased to find that, for several evenings together, just at a quarter past five in the afternoon, they all scudded away in great haste towards the south-east, and darted down among the low shrubs above the cottages at the end of the hill. This spot in many respects seems to be well calculated for their winter residence: for in

[1] [Hor., *De Arte Poetica,* 29.]

many parts it is as steep as the roof of any house, and therefore secure from the annoyances of water; and it is moreover clothed with beechen shrubs, which, being stunted and bitten by sheep, make the thickest covert imaginable; and are so entangled as to be impervious to the smallest spaniel: besides, it is the nature of underwood beech never to cast it's leaf all the winter; so that, with the leaves on the ground and those on the twigs, no shelter can be more complete. I watched them on to the thirteenth and fourteenth of *October*, and found their evening retreat was exact and uniform; but after this they made no regular appearance. Now and then a straggler was seen; and, on the twenty-second of *October*, I observed two in the morning over the village, and with them my remarks for the season ended.

From all these circumstances put together, it is more than probable that this lingering flight, at so late a season of the year, never departed from the island. Had they indulged me that autumn with a *November* visit, as I much desired, I presume that, with proper assistants, I should have settled the matter past all doubt; but though the third of *November* was a sweet day, and in appearance exactly suited to my wishes, yet not a martin was to be seen; and so I was forced, reluctantly, to give up the pursuit.

I have only to add that were the bushes, which cover some acres, and are not my own property, to be grubbed and carefully examined, probably those late broods, and perhaps the whole aggregate body of the house-martins of this district, might be found there, in different secret dormitories; and that, so far from withdrawing into warmer climes, it would appear that they never depart three hundred yards from the village.

LETTER LVI.

TO THE SAME.

They who write on natural history cannot too frequently advert to *instinct*, that wonderful limited faculty, which, in some instances, raises the brute creation as it were above *reason*, and in others leaves them so far below it. Philosophers have defined *instinct* to be that secret influence by which every species is impelled naturally to pursue, at all times, the same way or track, without any teaching or example; whereas *reason*, without instruction,

would often vary and do that by many methods which *instinct* effects by one alone. Now this maxim must be taken in a qualified sense; for there are instances in which *instinct* does vary and conform to the circumstances of place and convenience.

It has been remarked that every species of bird has a mode of nidification peculiar to itself; so that a school-boy would at once pronounce on the sort of nest before him. This is the case among fields and woods, and wilds; but, in the villages round *London*, where mosses and gossamer, and cotton from vegetables, are hardly to be found, the nest of the *chaffinch* has not that elegant finished appearance, nor is it so beautifully studded with lichens, as in a more rural district: and the *wren* is obliged to construct it's house with straws and dry grasses, which do not give it that rotundity and compactness so remarkable in the edifices of that little architect. Again, the regular nest of the *house-martin* is hemispheric; but where a rafter, or a joist, or a cornice, may happen to stand in the way, the nest is so contrived as to conform to the obstruction, and becomes flat or oval, or compressed.

In the following instances *instinct* is perfectly uniform and consistent. There are three creatures, the *squirrel*, the *field-mouse*, and the bird called the *nut-hatch* (*sitta Europœa*), which live much on hazel-nuts; and yet they open them each in a different way. The first, after rasping off the small end, splits the shell in two with his long fore-teeth, as a man does with his knife; the second nibbles a hole with his teeth, so regular as if drilled with a wimble, and yet so small that one would wonder how the kernel can be extracted through it; while the last picks an irregular ragged hole with it's bill: but as this artist has no paws to hold the nut firm while he pierces it, like an adroit workman, he fixes it, as it were in a vice, in some cleft of a tree, or in some crevice; when, standing over it, he perforates the stubborn shell. We have often placed nuts in the chink of a gate-post where *nut-hatches* have been known to haunt, and have always found that those birds have readily penetrated them. While at work they make a rapping noise that may be heard at a considerable distance.

You that understand both the theory and practical part of music may best inform us why *harmony* or *melody* should so strangely affect some men, as it were by recollection, for days after a concert is over. What I mean the following passage will most readily explain:

"Præhabebat porrò vocibus humanis, instrumentisque har-

"monicis musicam illam avium: non quod aliâ quoque non "delectaretur; sed quod ex musicâ humanâ relinqueretur in "animo continens quædam, attentionemque et somnum con- "turbans agitatio; dum ascensus, exscensus, tenores, ac muta- "tiones illæ sonorum, et consonantiarum euntque, redeuntque "per phantasiam:—cum nihil tale relinqui possit ex modulationi- "bus avium, quæ, quod non sunt perinde a nobis imitabiles, non "possunt perinde internam facultatem commovere."

Gassendus in Vitâ Peireskii.

This curious quotation strikes me much by so well representing my own case, and by describing what I have so often felt, but never could so well express. When I hear fine music I am haunted with passages therefrom night and day; and especially at first waking, which, by their importunity, give me more uneasiness than pleasure: elegant lessons still tease my imagination, and recur irresistibly to my recollection at seasons, and even when I am desirous of thinking of more serious matters.

I am, &c.

LETTER LVII.

TO THE SAME.

A RARE, and I think a new, little bird frequents my garden, which I have great reason to think is the *pettichaps:*[1] it is common in some parts of the kingdom; and I have received formerly several dead specimens from *Gibraltar.* This bird much resembles the *white-throat,* but has a more white or rather silvery breast and belly; is restless and active, like the *willow-wrens,* and hops from bough to bough, examining every part for food; it also runs up the stems of the *crown-imperials,* and, putting it's head into the bells of those flowers, sips the liquor which stands in the *nectarium* of each petal. Sometimes it feeds on the ground, like the *hedge-sparrow,* by hopping about on the grass-plots and mown walks.

One of my neighbours, an intelligent and observing man, informs me that, in the beginning of *May,* and about ten minutes before eight o'clock in the evening, he discovered a great cluster

[1] [Mr. Harting believes that White's little bird was not the garden warbler, but the lesser whitethroat. Ray (*Synopsis Avium,* p. 79) and Willughby (*Ornithologia,* p. 158) indicate that the name *pettichaps* was peculiar to Yorkshire.]

of *house-swallows*, thirty at least he supposes, perching on a willow that hung over the verge of *James Knight*'s upper-pond. His attention was first drawn by the twittering of these birds, which sat motionless in a row on the bough, with their heads all one way, and, by their weight, pressing down the twig so that it nearly touched the water. In this situation he watched them till he could see no longer. Repeated accounts of this sort, spring and fall, induce us greatly to suspect that *house-swallows* have some strong attachment to water, independent of the matter of food; and, though they may not retire into that element, yet they may conceal themselves in the banks of pools and rivers during the uncomfortable months of winter.

One of the keepers of *Wolmer-forest* sent me a *peregrine-falcon*, which he shot on the verge of that district as it was devouring a wood-pigeon. The *falco peregrinus*, or *haggard falcon*, is a noble species of hawk seldom seen in the southern counties.[1] In winter 1767 one was killed in the neighbouring parish of *Faringdon*, and sent by me to Mr. *Pennant* into *North-Wales*.[2] Since that time I have met with none till now. The specimen mentioned above was in fine preservation, and not injured by the shot: it measured forty-two inches from wing to wing, and twenty-one from beak to tail, and weighed two pounds and an half standing weight. This species is very robust, and wonderfully formed for rapine: it's breast was plump and muscular; it's thighs long, thick, and brawny; and it's legs remarkably short and well set: the feet were armed with most formidable, sharp, long talons: the eyelids and cere of the bill were yellow; but the irides of the eyes dusky; the beak was thick and hooked, and of a dark colour, and had a jagged process near the end of the upper mandible on each side: it's tail, or train, was short in proportion to the bulk of it's body: yet the wings, when closed, did not extend to the end of the train. From it's large and fair proportions it might be supposed to have been a female; but I was not permitted to cut open the specimen. For one of the birds of prey, which are usually lean, this was in high case: in it's craw were many barley-corns, which probably came from the crop of the

[1] ["This is a complete mistake. The species breeds, or used to breed, all along the south coast, where the cliffs are steep enough, from Sussex to Devonshire, if not from Kent to Cornwall. White does not seem to have known that this was the common falcon used by falconers. Its occurrence in the interior is by no means infrequent."—*Newton*, in Bell's edition.]

[2] See my tenth and eleventh letter to that gentleman.

wood-pigeon, on which it was feeding when shot: for voracious birds do not eat grain; but, when devouring their quarry, with undistinguishing vehemence swallow bones and feathers, and all matters, indiscriminately. This falcon was probably driven from the mountains of *North Wales* or *Scotland*, where they are known to breed, by rigorous weather and deep snows that had lately fallen.

I am, &c.

LETTER LVIII.

TO THE SAME.

My near neighbour, a young gentleman in the service of the *East-India* Company, has brought home a dog and a bitch of the *Chinese* breed from *Canton;* such as are fattened in that country for the purpose of being eaten: they are about the size of a moderate spaniel; of a pale yellow colour, with coarse bristling hairs on their backs; sharp upright ears, and peaked heads, which give them a very fox-like appearance. Their hind legs are unusually straight, without any bend at the hock or ham, to such a degree as to give them an aukward gait when they trot. When they are in motion their tails are curved high over their backs like those of some hounds, and have a bare place each on the outside from the tip midway, that does not seem to be matter of accident, but somewhat singular. Their eyes are jet-black, small, and piercing; the insides of their lips and mouths of the same colour, and their tongues blue. The bitch has a dew-claw on each hind leg; the dog has none. When taken out into a field the bitch showed some disposition for hunting, and dwelt on the scent of a covey of partridges till she sprung them, giving her tongue all the time. The dogs in *South America* are dumb; but these bark much in a short thick manner, like foxes; and have a surly, savage demeanour like their ancestors, which are not domesticated, but bred up in sties, where they are fed for the table with rice-meal and other farinaceous food. These dogs, having been taken on board as soon as weaned, could not learn much from their dam; yet they did not relish flesh when they came to *England*. In the islands of the *pacific* ocean the dogs are bred up on vegetables, and would not eat flesh when offered them by our circumnavigators.

We believe that all dogs, in a state of nature, have sharp, upright fox-like ears; and that hanging ears, which are esteemed so graceful, are the effect of choice breeding and cultivation. Thus, in the Travels of *Ysbrandt Ides* from *Muscovy* to *China*, the dogs which draw the *Tartars* on snow-sledges near the river *Oby* are engraved with prick-ears, like those from *Canton*. The *Kamschatdales* also train the same sort of sharp-eared peaked-nosed dogs to draw their sledges; as may be seen in an elegant print engraved for Captain *Cook*'s last voyage round the world.

Now we are upon the subject of dogs it may not be impertinent to add, that spaniels, as all sportsmen know, though they hunt partridges and pheasants as it were by instinct, and with much delight and alacrity, yet will hardly touch their bones when offered as food; nor will a mongrel dog of my own, though he is remarkable for finding that sort of game. But, when we came to offer the bones of partridges to the two *Chinese* dogs, they devoured them with much greediness, and licked the platter clean.

No sporting dogs will flush woodcocks till inured to the scent and trained to the sport, which they then pursue with vehemence and transport; but then they will not touch their bones, but turn from them with abhorrence, even when they are hungry.

Now, that dogs should not be fond of the bones of such birds as they are not disposed to hunt is no wonder; but why they reject and do not care to eat their natural game is not so easily accounted for, since the end of hunting seems to be, that the chase pursued should be eaten. Dogs again will not devour the more rancid water-fowls, nor indeed the bones of any wild-fowls; nor will they touch the fœtid bodies of birds that feed on offal and garbage: and indeed there may be somewhat of providential instinct in this circumstance of dislike; for vultures,[1] and kites, and ravens, and crows, &c. were intended to be messmates with dogs[2] over their carrion; and seem to be appointed by Nature as fellow-scavengers to remove all cadaverous nuisances from the face of the earth.

I am, &c.

[1] *Hasselquist*, in his Travels to the *Levant*, observes that the dogs and vultures at *Grand Cairo* maintain such a friendly intercourse as to bring up their young together in the same place.

[2] The *Chinese* word for a dog to an *European* ear sounds like *quihloh*.

LETTER LIX.

TO THE SAME.

THE fossil wood buried in the bogs of *Wolmer-forest* is not yet all exhausted; for the peat-cutters now and then stumble upon a log. I have just seen a piece which was sent by a labourer of *Oakhanger* to a carpenter of this village; this was the but-end of a small oak, about five feet long, and about five inches in diameter. It had apparently been severed from the ground by an axe, was very ponderous, and as black as ebony. Upon asking the carpenter for what purpose he had procured it; he told me that it was to be sent to his brother, a joiner at *Farnham*, who was to make use of it in cabinet work, by inlaying it along with whiter woods.

Those that are much abroad on evenings after it is dark, in spring and summer, frequently hear a nocturnal bird passing by on the wing, and repeating often a short quick note. This bird I have remarked myself, but never could make out till lately. I am assured now that it is the *Stone-curlew* (*charadrius oedicnemus*). Some of them pass over or near my house almost every evening after it is dark, from the uplands of the hill and *North field*, away down towards *Dorton;* where, among the streams and meadows, they find a greater plenty of food. Birds that fly by night are obliged to be noisy; their notes often repeated become signals or watch-words to keep them together, that they may not stray or lose each the other in the dark.

The evening proceedings and manœuvres of the rooks are curious and amusing in the autumn. Just before dusk they return in long strings from the foraging of the day, and rendezvous by thousands over *Selborne-down*, where they wheel round in the air, and sport and dive in a playful manner, all the while exerting their voices, and making a loud cawing, which, being blended and softened by the distance that we at the village are below them, becomes a confused noise or chiding; or rather a pleasing murmur, very engaging to the imagination, and not unlike the cry of a pack of hounds in hollow, echoing woods, or the rushing of the wind in tall trees, or the tumbling of the tide upon a pebbly shore. When this ceremony is over, with the last gleam of day, they retire for the night to the deep beechen woods of *Tisted* and *Ropley*. We remember a little girl who, as she was going to bed, used to remark on such an occurrence, in the true spirit of *physico-*

theology, that the rooks were saying their prayers; and yet this child was much too young to be aware that the scriptures have said of the Deity—that "he feedeth the ravens who call upon him".

I am, &c.

LETTER LX.

TO THE SAME.

In reading Dr. *Huxham's Observationes de Aëre*, &c. written at *Plymouth*, I find by those curious and accurate remarks, which contain an account of the weather from the year 1727 to the year 1748, inclusive, that though there is frequent rain in that district of *Devonshire*, yet the quantity falling is not great; and that some years it has been very small: for in 1731 the rain measured only $17^{inch}.—266^{thou}.$ and in 1741, 20—354; and again, in 1743 only 20—908. Places near the sea have frequent scuds, that keep the atmosphere moist, yet do not reach far up into the country; making thus the maritime situations appear wet, when the rain is not considerable. In the wettest years at *Plymouth* the Doctor measured only once 36; and again once, *viz.* 1734, 37—114: a quantity of rain that has twice been exceeded at *Selborne* in the short period of my observations. Dr. *Huxham* remarks, that frequent small rains keep the air moist; while heavy ones render it more dry, by beating down the vapours. He is also of opinion that the *dingy, smoky appearance* in the sky, in very dry seasons, arises from the want of moisture sufficient to let the light through, and render the atmosphere transparent; because he had observed several bodies more diaphanous when wet than dry; and did never recollect that the air had that look in rainy seasons.

My friend, who lives just beyond the top of the down, brought his three swivel guns to try them in my outlet, with their muzzles towards the *Hanger*, supposing that the report would have had a great effect; but the experiment did not answer his expectation. He then removed them to the *Alcove* on the *Hanger;* when the sound, rushing along the *Lythe* and *Comb-wood*, was very grand: but it was at the *Hermitage* that the echoes and repercussions delighted the hearers; not only filling the *Lythe* with the roar, as if all the beeches were tearing up by the roots; but, turning

to the left, they pervaded the vale above *Combwood-ponds;* and after a pause seemed to take up the crash again, and to extend round *Harteley-hangers*, and to die away at last among the coppices and coverts of *Ward le ham.* It has been remarked before that this district is an *anathoth*, a place of responses or echoes, and therefore proper for such experiments: we may farther add that the pauses in echoes, when they cease and yet are taken up again, like the pauses in music, surprise the hearers, and have a fine effect on the imagination.

The gentleman above mentioned has just fixed a barometer in his parlour at *Newton Valence.* The tube was first filled here (at *Selborne*) twice with care, when the mercury agreed and stood exactly with my own; but, being filled again twice at *Newton*, the mercury stood, on account of the great elevation of that house, three-tenths of an inch lower than the barometers at this village, and so continues to do, be the weight of the atmosphere what it may. The plate of the barometer at *Newton* is figured as low as 27; because in stormy weather the mercury there will sometimes descend below 28. We have supposed *Newton-house* to stand two hundred feet higher than this house: but if the rule holds good, which says that mercury in a barometer sinks one-tenth of an inch for every hundred feet elevation, then the *Newton* barometer, by standing three-tenths lower than that of *Selborne*, proves that *Newton-house* must be three hundred feet higher than that in which I am writing, instead of two hundred.

It may not be impertinent to add, that the barometers at *Selborne* stand three-tenths of an inch lower than the barometers at *South Lambeth:* whence we may conclude that the former place is about three hundred feet higher than the latter; and with good reason, because the streams that rise with us run into the *Thames* at *Weybridge*, and so to *London.* Of course therefore there must be lower ground all the way from *Selborne* to *South Lambeth;* the distance between which, all the windings and indentings of the streams considered, cannot be less than an hundred miles.[1]

I am, &c.

[1] [I find by means of a good aneroid barometer that the highest part of Selborne Hill is nearly or quite 300 feet above the house at Selborne; and Newton Vicarage, on the same hill, is not far from that elevation. The barometer fitted by Gilbert White himself, and doubtless the one to which he alludes in this letter, is still in the old place, fixed at the end of his own bookcase; and what is worthy of notice, besides the graduation marked on the tube itself, there is by its side a small ivory plate, graduated nearly '3 of an inch lower than the Selborne reading, and which

LETTER LXI.

TO THE SAME.

SINCE the weather of a district is undoubtedly part of it's natural history, I shall make no further apology for the four following letters, which will contain many particulars concerning some of the great frosts and a few respecting some very hot summers, that have distinguished themselves from the rest during the course of my observations.

As the frost in *January* 1768 was, for the small time it lasted, the most severe that we had then known for many years, and was remarkably injurious to ever-greens, some account of it's rigour, and reason of it's ravages, may be useful, and not unacceptable to persons that delight in planting and ornamenting; and may particularly become a work that professes never to lose sight of utility.

For the last two or three days of the former year there were considerable falls of snow, which lay deep and uniform on the ground without any drifting, wrapping up the more humble vegetation in perfect security. From the first day to the fifth of the new year more snow succeeded; but from that day the air became entirely clear; and the heat of the sun about noon had a considerable influence in sheltered situations.

It was in such an aspect that the snow on the author's evergreens was melted every day, and frozen intensely every night; so that the laurustines, bays, laurels, and arbutuses looked, in three or four days, as if they had been burnt in the fire; while a neighbour's plantation of the same kind, in a high cold situation, where the snow was never melted at all, remained uninjured.

From hence I would infer that it is the repeated melting and freezing of the snow that is so fatal to vegetation, rather than the severity of the cold. Therefore it highly behoves every planter, who wishes to escape the cruel mortification of losing

doubtless was intended to show at a glance the height of the mercury at his nephew's parsonage at Newton Valence, where a similar instrument still exists, attached to the bookcase in the study, with a graduated ivory plate by its side, and the tube of the same size. The Newton tradition assigns the construction and fixing of this instrument to Gilbert White; and there can be no doubt of its correctness. Thus both the barometers mentioned in the letter are still in existence, and in working order. My friend and neighbour, the Rev. A. N. C. Maclachlan, the present incumbent, preserves the Newton one with a sacred care.—*Bell.*]

in a few days the labour and hopes of years, to bestir himself on such emergencies; and, if his plantations are small, to avail himself of mats, cloths, pease-haum, straw, reeds, or any such covering, for a short time; or, if his shrubberies are extensive, to see that his people go about with prongs and forks, and carefully dislodge the snow from the boughs, since the naked foliage will shift much better for itself, than where the snow is partly melted and frozen again.

It may perhaps appear at first like a paradox; but doubtless the more tender trees and shrubs should never be planted in hot aspects; not only for the reason assigned above, but also because, thus circumstanced, they are disposed to shoot earlier in the spring, and grow on later in the autumn, than they would otherwise do, and so are sufferers by lagging or early frosts. For this reason also plants from *Siberia* will hardly endure our climate; because, on the very first advances of spring, they shoot away, and so are cut off by the severe nights of *March* or *April*.

Dr. *Fothergill* and others have experienced the same inconvenience with respect to the more tender shrubs from *North-America;* which they therefore plant under north-walls. There should also perhaps be a wall to the east to defend them from the piercing blasts from that quarter.

This observation might without any impropriety be carried into animal life; for discerning bee-masters now find that their hives should not in the winter be exposed to the hot sun, because such unseasonable warmth awakens the inhabitants too early from their slumbers; and, by putting their juices into motion too soon, subjects them afterwards to inconveniences when rigorous weather returns.

The coincidents attending this short but intense frost were, that the horses fell sick with an epidemic distemper, which injured the winds of many, and killed some; that colds and coughs were general among the human species; that it froze under people's beds for several nights; that meat was so hard frozen that it could not be spitted, and could not be secured but in cellars; that several redwings and thrushes were killed by the frost; and that the large titmouse continued to pull straws lengthwise from the eaves of thatched houses and barns in a most adroit manner, for a purpose that has been explained already.[1]

[1] See Letter XLI. to Mr. *Pennant*.

On the 3d of *January Benjamin Martin*'s thermometer within doors, in a close parlour where there was no fire, fell in the night to 20, and on the 4th to 18, and the 7th to 17½, a degree of cold which the owner never since saw in the same situation; and he regrets much that he was not able at that juncture to attend his instrument abroad. All this time the wind continued north and north-east; and yet on the 8th roost-cocks, which had been silent, began to sound their clarions, and crows to clamour, as prognostic of milder weather; and, moreover, moles began to heave and work, and a manifest thaw took place. From the latter circumstance we may conclude that thaws often originate under ground from warm vapours which arise;[1] else how should subterraneous animals receive such early intimations of their approach? Moreover, we have often observed that cold seems to descend from above;[2] for, when a thermometer hangs abroad in a frosty night, the intervention of a cloud shall immediately raise the mercury ten degrees; and a clear sky shall again compel it to descend to it's former gage.

And here it may be proper to observe, on what has been said above, that though frosts advance to their utmost severity by somewhat of a regular gradation, yet thaws do not usually come on by as regular a declension of cold; but often take place immediately from intense freezing; as men in sickness often mend at once from a paroxysm.

To the great credit of *Portugal* laurels and *American* junipers, be it remembered that they remained untouched amidst the general havock: hence men should learn to ornament chiefly with such trees as are able to withstand accidental severities, and not subject themselves to the vexation of a loss which may befall them once perhaps in ten years, yet may hardly be recovered through the whole course of their lives.

As it appeared afterwards the ilexes were much injured, the cypresses were half destroyed, the arbutuses lingered on, but never recovered; and the bays, laurustines, and laurels, were killed to the ground; and the very wild hollies, in hot aspects, were so much affected that they cast all their leaves.

[1] [This notion was perhaps put into White's mind by some remarks in Hales' *Statical Essays*, *e.g.*, vol. ii., p. 360. It is almost needless to point out that changes of weather arise not in the earth, but in the atmosphere, as the power of prediction by observation of the barometer implies.]

[2] [We now explain the fact which White goes on to relate by the radiation of heat into space.]

By the 14th of *January* the snow was entirely gone; the turnips emerged not damaged at all, save in sunny places; the wheat looked delicately, and the garden plants were well preserved; for snow is the most kindly mantle that infant vegetation can be wrapped in: were it not for that friendly meteor[1] no vegetable life could exist at all in northerly regions. Yet in *Sweden* the earth in *April* is not divested of snow for more than a fortnight before the face of the country is covered with flowers.

LETTER LXII.[2]

TO THE SAME.

THERE were some circumstances attending the remarkable frost in *January* 1776 so singular and striking, that a short detail of them may not be unacceptable.

The most certain way to be exact will be to copy the passages from my journal, which were taken from time to time as things occurred. But it may be proper previously to remark that the first week in *January* was uncommonly wet, and drowned with vast rains from every quarter: from whence may be inferred, as there is great reason to believe is the case, that intense frosts seldom take place till the earth is perfectly glutted and chilled with water;[3] and hence dry autumns are seldom followed by rigorous winters.

January 7th.—Snow driving all the day, which was followed by frost, sleet, and some snow, till the 12th, when a prodigious mass overwhelmed all the works of men, drifting over the tops of the gates and filling the hollow lanes.

On the 14th the writer was obliged to be much abroad; and thinks he never before or since has encountered such rugged *Siberian* weather. Many of the narrow roads were now filled

[1] [The primary meaning of *meteor* is *high in the air;* thus the heavenly bodies and at length any kind of natural phenomenon came to be denoted by this word. White learned from Ray and Derham to call rain, snow, cloud and wind *meteors*, an usage which is still commemorated by the word *meteorology*.]

[2] [In orig. this Letter is wrongly numbered LXI., and the rest of the Letters on Natural History, following in regular sequence, bear wrong numbers.]

[3] The autumn preceding *January* 1768 was very wet, and particularly the month of *September*, during which there fell at *Lyndon*, in the county of *Rutland*, *six inches and an half* of rain. And the terrible long frost of 1739-40 set in after a rainy season, and when the springs were very high.

above the tops of the hedges; through which the snow was driven into most romantic and grotesque shapes, so striking to the imagination as not to be seen without wonder and pleasure. The poultry dared not to stir out of their roosting places; for cocks and hens are so dazzled and confounded by the glare of snow that they would soon perish without assistance. The hares also lay sullenly in their seats, and would not move till compelled by hunger; being conscious, poor animals, that the drifts and heaps treacherously betray their footsteps, and prove fatal to numbers of them.

From the 14th the snow continued to increase, and began to stop the road waggons and coaches, which could no longer keep on their regular stages; and especially on the western roads, where the fall appears to have been deeper than in the south. The company at *Bath*, that wanted to attend the *Queen's birth-day*, were strangely incommoded: many carriages of persons, who got in their way to town from *Bath* as far as *Marlborough*, after strange embarrassments, here met with a *ne plus ultra*. The ladies fretted, and offered large rewards to labourers, if they would shovel them a track to *London:* but the relentless heaps of snow were too bulky to be removed; and so the 18th passed over, leaving the company in very uncomfortable circumstances at the *Castle* and other inns.

On the 20th the sun shone out for the first time since the frost began; a circumstance that has been remarked before much in favour of vegetation. All this time the cold was not very intense, for the thermometer stood at 29, 28, 25, and thereabout; but on the 21st it descended to 20. The birds now began to be in a very pitiable and starving condition. Tamed by the season, sky-larks settled in the streets of towns, because they saw the ground was bare; rooks frequented dunghills close to houses; and crows watched horses as they passed, and greedily devoured what dropped from them; hares now came into men's gardens, and, scraping away the snow, devoured such plants as they could find.

On the 22d the author had occasion to go to *London* through a sort of *Laplandian-scene*, very wild and grotesque indeed. But the metropolis itself exhibited a still more singular appearance than the country; for, being bedded deep in snow, the pavement of the streets could not be touched by the wheels or the horses' feet, so that the carriages ran about without the least noise. Such an exemption from din and clatter was strange, but not

pleasant; it seemed to convey an uncomfortable idea of desolation:

"— — — — — — — — ipsa silentia terrent."[1]

On the 27th much snow fell all day, and in the evening the frost became very intense. At *South Lambeth*, for the four following nights, the thermometer fell to 11, 7, 6, 6; and at *Selborne* to 7, 6, 10; and on the 31st of *January*, just before sun-rise, with rime on the trees and on the tube of the glass, the quicksilver sunk exactly to zero, being 32 degrees below the freezing point: but by eleven in the morning, though in the shade, it sprung up to 16½[2]—a most unusual degree of cold this for the south of *England!* During these four nights the cold was so penetrating that it occasioned ice in warm chambers and under beds; and in the day the wind was so keen that persons of robust constitutions could scarcely endure to face it. The *Thames* was at once so frozen over both above and below bridge that crowds ran about on the ice. The streets were now strangely incumbered with snow, which crumbled and trod dusty; and, turning grey, resembled bay-salt: what had fallen on the roofs was so perfectly dry that, from first to last, it lay twenty-six days on the houses in the city; a longer time than had been remembered by the oldest housekeepers living. According to all appearances we might now have expected the continuance of this rigorous weather for weeks to come, since every night increased in severity; but behold, without any apparent cause, on the 1st of *February* a thaw took place, and some rain followed before night; making good the observation above, that frosts often go off as it were at once, without any gradual declension of cold. On the 2d of *February* the thaw persisted; and on the 3d swarms of little insects were frisking and sporting in a court-yard at *South Lambeth*, as if they had felt no frost. Why the juices in the small bodies and smaller limbs of such minute beings are not frozen is a matter of curious inquiry.[3]

Severe frosts seem to be partial, or to run in currents; for, at

[1] [Virg., *Æn.*, ii., 755.]

[2] At *Selborne* the cold was greater than at any other place that the author could hear of with certainty: though some reported at the time that at a village in *Kent* the thermometer fell two degrees below zero, *viz.* 34 degrees below the freezing point.

The thermometer used at *Selborne* was graduated by *Benjamin Martin.*

[3] [It seems paradoxical, but it is experimentally ascertained, that it is extremely difficult to freeze fluids in capillary tubes.]

the same juncture, as the author was informed by accurate correspondents, at *Lyndon*, in the county of *Rutland*, the thermometer stood at 19; at *Blackburn*, in *Lancashire*, at 19; and at *Manchester* at 21, 20, and 18. Thus does some unknown circumstance strangely overbalance latitude, and render the cold sometimes much greater in the southern than the northern parts of this kingdom.

The consequences of this severity were, that in *Hampshire*, at the melting of the snow, the wheat looked well, and the turnips came forth little injured. The laurels and laurustines were somewhat damaged, but only in *hot aspects*. No evergreens were quite destroyed; and not half the damage sustained that befell in *January* 1768. Those laurels that were a little scorched on the south-sides were perfectly untouched on their north-sides. The care taken to shake the snow day by day from the branches seemed greatly to avail the author's evergreens. A neighbour's laurel-hedge, in a high situation, and facing to the north, was perfectly green and vigorous; and the *Portugal laurels* remained unhurt.

As to the birds, the thrushes and blackbirds were mostly destroyed; and the partridges, by the weather and poachers, were so thinned that few remained to breed the following year.

LETTER LXIII.

TO THE SAME.

As the frost in *December* 1784 was very extraordinary, you, I trust, will not be displeased to hear the particulars; and especially when I promise to say no more about the severities of winter after I have finished this letter.

The first week in *December* was very wet, with the barometer very low. On the 7th, with the barometer at 28—five tenths, came on a vast snow, which continued all that day and the next, and most part of the following night; so that by the morning of the 9th the works of men were quite overwhelmed, the lanes filled so as to be impassable, and the ground covered twelve or fifteen inches without any drifting. In the evening of the 9th the air began to be so very sharp that we thought it would be curious to attend to the motions of a thermometer: we therefore hung out two; one made by *Martin* and one by *Dollond*, which

soon began to shew us what we were to expect; for, by ten o'clock, they fell to 21, and at eleven to 4, when we went to bed. On the 10th, in the morning, the quicksilver of *Dollond*'s glass was down to *half a degree below zero;* and that of *Martin*'s, which was absurdly graduated only to four degrees *above zero*, sunk quite into the brass guard of the ball; so that when the weather became most interesting this was useless. On the 10th, at eleven at night, though the air was perfectly still, *Dollond*'s glass went down to *one degree below zero!* This strange severity of the weather made me very desirous to know what degree of cold there might be in such an exalted and near situation as *Newton*. We had therefore, on the morning of the 10th, written to Mr. ——, and entreated him to hang out his thermometer, made by *Adams;* and to pay some attention to it morning and evening; expecting wonderful phænomena, in so elevated a region, at two hundred feet or more above my house. But, behold! on the 10th, at eleven at night, it was down only to 17, and the next morning at 22, when mine was at ten! We were so disturbed at this unexpected reverse of comparative local cold, that we sent one of my glasses up, thinking that of Mr. —— must, some how, be wrongly constructed. But, when the instruments came to be confronted, they went exactly together: so that, for one night at least, the cold at *Newton* was 18 degrees less than at *Selborne;* and, through the whole frost, 10 or 12 degrees;[1] and indeed, when we came to observe consequences, we could readily credit this; for all my laurustines, bays, ilexes, arbutuses, cypresses, and even my *Portugal laurels*,[2] and (which occasions more regret) my fine sloping laurel hedge, were scorched up; while, at *Newton*, the same trees have not lost a leaf!

We had steady frost on to the 25th, when the thermometer in the morning was down to 10 with us, and at *Newton* only to 21. Strong frost continued till the 31st, when some tendency to thaw was observed; and, by *January* the 3d, 1785, the thaw was confirmed, and some rain fell.

A circumstance that I must not omit, because it was new to us, is, that on *Friday, December* the 10th, being bright sun-shine,

[1] [In the still weather which usually accompanies a very hard frost, the coldest air settles in the hollows, and here the lowest temperatures are observed.]

[2] Mr. *Miller*, in his Gardener's Dictionary, says positively that the *Portugal laurels* remained untouched in the remarkable frost of 1739-40. So that either that accurate observer was much mistaken, or else the frost of *December* 1784 was much more severe and destructive than that in the year above-mentioned.

the air was full of icy *spiculæ*, floating in all directions, like atoms in a sun-beam let into a dark room. We thought them at first particles of the rime falling from my tall hedges; but were soon convinced to the contrary, by making our observations in open places where no rime could reach us. Were they watery particles of the air frozen as they floated; or were they evaporations from the snow frozen as they mounted?

We were much obliged to the thermometers for the early information they gave us; and hurried our apples, pears, onions, potatoes, &c. into the cellar, and warm closets; while those who had not, or neglected such warnings, lost all their stores of roots and fruits, and had their very bread and cheese frozen.

I must not omit to tell you that, during those two *Siberian* days, my parlour-cat was so electric, that had a person stroked her, and been properly *insulated*, the shock might have been given to a whole circle of people.

I forgot to mention before, that, during the two severe days, two men, who were tracing hares in the snow, had their feet frozen; and two men, who were much better employed, had their fingers so affected by the frost, while they were thrashing in a barn, that a mortification followed, from which they did not recover for many weeks.

This frost killed all the furze[1] and most of the ivy, and in many places stripped the hollies of all their leaves. It came at a very early time of the year, before old *November* ended; and yet may be allowed from it's effects to have exceeded any since 1739-40.

LETTER LXIV.

TO THE SAME.

As the effects of heat are seldom very remarkable in the northerly climate of *England*, where the summers are often so defective in warmth and sun-shine as not to ripen the fruits of the earth so well as might be wished, I shall be more concise in my account of the severity of a summer season, and so make a little amends for the prolix account of the degrees of cold, and the inconveniences that we suffered from late rigorous winters.

The summers of 1781 and 1783 were unusually hot and dry;

[1] [Furze is near its northern limit in England. Even in Scotland it is by comparison scanty, and on the continent it does not extend north of Denmark.]

to them therefore I shall turn back in my journals, without recurring to any more distant period. In the former of these years my peach and nectarine-trees suffered so much from the heat that the rind on the bodies was scalded and came off; since which the trees have been in a decaying state. This may prove a hint to assiduous gardeners to fence and shelter their wall-trees with mats or boards, as they may easily do, because such annoyance is seldom of long continuance. During that summer also, I observed that my apples were coddled, as it were, on the trees; so that they had no quickness of flavour, and would not keep in the winter. This circumstance put me in mind of what I have heard travellers assert, that they never ate a good apple or apricot in the south of *Europe*, where the heats were so great as to render the juices vapid and insipid.

The great pests of a garden are wasps, which destroy all the finer fruits just as they are coming into perfection. In 1781 we had none; in 1783 there were myriads; which would have devoured all the produce of my garden, had not we set the boys to take the nests, and caught thousands with hazel twigs tipped with bird-lime: we have since employed the boys to take and destroy the large breeding wasps in the spring. Such expedients have a great effect on these marauders, and will keep them under. Though wasps do not abound but in hot summers, yet they do not prevail in every hot summer, as I have instanced in the two years above-mentioned.

In the sultry season of 1783 honey-dews were so frequent as to deface and destroy the beauties of my garden. My honey-suckles, which were one week the most sweet and lovely objects that the eye could behold, became the next the most loathsome; being enveloped in a viscous substance, and loaded with black aphides, or smother-flies. The occasion of this clammy appearance seems to be this, that in hot weather the effluvia of flowers in fields and meadows and gardens are drawn up in the day by a brisk evaporation, and then in the night fall down again with the dews, in which they are entangled;[1] that the air is strongly scented,

[1] [White's explanation of the origin of honey-dew is quite impossible. Perhaps he got his fanciful explanation from Hales (*Statical Essays*, vol. ii., p. 357), who suggests that the chief use of pollen is to disperse "an atmosphere of sublimed sulphurous pounce (for many trees and plants abound with it), which uniting with the air particles, they, or a very sublimed spirit from them, may perhaps be inspired or imbibed at several parts of the plant, and especially at the *Pistillum*, and be thence conveyed to the *Capsula seminalis*, etc."; or he may have read in Pliny that honey-dew falls from heaven. Réaumur (*Hist. des Insectes*, vol. iii., *Mém.* ix.) long ago

and therefore impregnated with the particles of flowers in summer weather, our senses will inform us; and that this clammy sweet substance is of the vegetable kind we may learn from bees, to whom it is very grateful: and we may be assured that it falls in the night, because it is always seen first in warm still mornings.

On chalky and sandy soils, and in the hot villages about *London*, the thermometer has been often observed to mount as high as 83 or 84; but with us, in this hilly and woody district, I have hardly ever seen it exceed 80; nor does it often arrive at that pitch. The reason, I conclude, is, that our dense clayey soil, so much shaded by trees, is not so easily heated through as those above-mentioned: and, besides, our mountains cause currents of air and breezes; and the vast effluvia from our woodlands temper and moderate our heats.

LETTER LXV.

TO THE SAME.

THE summer of the year 1783 was an amazing and portentous one, and full of horrible phænomena; for, besides the alarming

showed that aphides discharge a sugary fluid from the intestine, which collects on leaves in dry summer weather; he was also aware, like Goedaert before him, that ants are fond of this excretion, and protect and caress the aphides for the sake of it. It was, however, long believed that there is also a true vegetable honey-dew, not excreted by insects at all. This was taught by Treviranus, Boussingault and Hooker, and Darwin vigorously maintained the same doctrine (*Cross- and Self-fertilisation*, p. 404). It cannot, however, stand the observations and experiments of Büsgen (*Jen. Zeits. f. Nat.*, 1891), who shows that except small quantities excreted by sundry insects and by the parasitic fungus, *Claviceps purpurea*, all honey-dew is formed by aphides and scale-insects. The fluid is dropped or squirted out, and may fall in a fine shower on distant objects. When fresh drops are observed on a leaf, it is instructive to place a piece of paper or a glass slip on the same spot. It will generally become sprinkled with honey-dew before long, and thus will show that the sugary fluid does not exude from the leaf, but is dropped from above. Moreover, the drops do not grow steadily, as we should expect them to do if they exuded from the plant, but increase only by running together. The tongue or proboscis of an aphis is beautifully contrived for penetrating the tissues of a leaf or shoot. It works its way in between the hard and impenetrable structures, often taking a sinuous course till it reaches the soft bast, whose vessels are then tapped. Linnæus originated the oft-repeated error, still to be found in modern books, that the tubes on the abdomen of the aphis discharge the sugary excretion. The tubes emit a fluid which sets on exposure to air, and is believed in some measure to protect the aphis from its many insect-enemies (lady-bird larvæ, Chrysopa-larvæ, Syrphus-larvæ, &c.). The tubes can be pointed towards the place of attack, the fluid is discharged, and the face or jaws of the assailant are at times so clogged that he retires to rub them clean. But neither this artifice nor the friendly aid of the ants are altogether adequate, for the aphides are often devoured in countless numbers.]

meteors and tremendous thunder-storms that affrighted and distressed the different counties of this kingdom, the peculiar *haze*, or smokey fog, that prevailed for many weeks in this island, and in every part of *Europe*, and even beyond it's limits, was a most extraordinary appearance, unlike anything known within the memory of man.[1] By my journal I find that I had noticed this strange occurrence from *June* 23 to *July* 20 inclusive, during which period the wind varied to every quarter without making any alteration in the air. The sun, at noon, looked as blank as a clouded moon, and shed a rust-coloured ferruginous light on the ground, and floors of rooms; but was particularly lurid and blood-coloured at rising and setting. All the time the heat was so intense that butchers' meat could hardly be eaten on the day after it was killed; and the flies swarmed so in the lanes and hedges that they rendered the horses half frantic, and riding irksome. The country people began to look with a superstitious awe at the red, louring aspect of the sun; and indeed there was reason for the most enlightened person to be apprehensive; for, all the while, *Calabria* and part of the isle of *Sicily*, were torn and convulsed with earthquakes; and about that juncture a *volcano* sprung out of the sea on the coast of *Norway*.[2] On this

[1] [This has become a classical passage, and is often quoted in illustration of the phenomena which attended the great eruption of Krakatoa in 1883 (See *Report of the Krakatoa Committee of the Royal Society*, 1888). It is believed that hazes with red after-glows and other optical effects spread over wide areas after volcanic eruptions in which much fine dust is shot into the air. Three instances have been noted, belonging to the years 1783, 1831 and 1883.

The great eruption of Skaptar Jökull in Iceland is supposed to be connected with the dry fog of 1783. The eruption began in May, and continued for nearly two years. In the end of May a dry fog was observed at Copenhagen, which gradually spread to North Africa, Asia and North America. In Caithness the crops were destroyed, and 1783 was long remembered as the "year of the ashie".

The year 1831 was marked by great eruptions in the Mediterranean (Graham Island), Equador and the Bahujan Islands. Red after-glows were seen in England, South Europe and Washington.

During the Krakatoa eruption (August 26-27, 1883) much fine volcanic dust filled the air along the neighbouring coasts. On 8th September dust fell upon the deck of the *Scotia*, which was 3,700 miles from the volcano. The dust-haze spread at a rate of over 70 miles an hour, at first westward, but afterwards northward and southward. Within the equatorial belt it was often so dense as to hide the sun when near the horizon. In November and December unusual twilight effects were seen in England, the red after-glows in particular being generally remarked. Similar appearances were noted in Honolulu, the United States, Chili, Brazil, New Zealand, Australia, the Cape, Iceland, and many parts of Europe. The density of the haze at different places and the dates of occurrence were believed to indicate propagation from Krakatoa.]

[2] [White's information may have been taken from Sir W. Hamilton's account, printed in the *Philosophical Transactions*, vol. lxxiii., and largely quoted in the

occasion *Milton*'s noble simile of the sun, in his first book of *Paradise Lost*, frequently occurred to my mind; and it is indeed particularly applicable, because, towards the end, it alludes to a superstitious kind of dread, with which the minds of men are always impressed by such strange and unusual phænomena.

"— — — As when the *sun*, new risen,
"Looks through the horizontal, *misty* air,
"*Shorn* of his *beams*; or from behind the moon,
"In *dim* eclipse, *disastrous twilight sheds*
"On half the nations, and with *fear* of *change*
"*Perplexes* monarchs.[1] — — — — — —"

LETTER LXVI.

TO THE SAME.

We are very seldom annoyed with thunder-storms: and it is no less remarkable than true, that those which arise in the south have hardly been known to reach this village; for, before they get over us, they take a direction to the east or to the west, or sometimes divide into two, and go in part to one of those quarters, and in part to the other; as was truly the case in summer 1783, when, though the country round was continually harassed with tempests, and often from the south, yet we escaped them all; as appears by my journal of that summer. The only way that I can at all account for this fact—for such it is—is that, on that quarter, between us and the sea, there are continual mountains, hill behind hill, such as *Nore-hill*, the *Barnet*, *Butser-hill*, and *Ports-down*, which some how divert the storms, and give them a different direction. High promontories, and elevated grounds, have always been observed to attract clouds and disarm them of their mischievous contents, which are discharged into the trees and summits as soon as they come in contact with those turbulent meteors; while the humble vales escape, because they are so far beneath them.

But, when I say I do not remember a thunder-storm from the south, I do not mean that we never have suffered from thunder-storms at all; for on *June* 5th, 1784, the thermometer in the

Annual Register for 1783. Hamilton estimates the loss of life at 40,000. An "island just risen out of the ocean near Iceland" is mentioned in the *Gentleman's Magazine* for April, 1783, and in the *Annual Register* for the same year.]

[1] [*Paradise Lost*, i., 594.]

morning being at 64, and at noon at 70, the barometer at 29—six tenths one-half, and the wind north, I observed a blue mist, smelling strongly of sulphur, hanging along our sloping woods, and seeming to indicate that thunder was at hand. I was called in about two in the afternoon, and so missed seeing the gathering of the clouds in the north; which they who were abroad assured me had something uncommon in it's appearance. At about a quarter after two the storm began in the parish of *Hartley*, moving slowly from north to south; and from thence it came over *Norton-farm*, and so to *Grange-farm*, both in this parish. It began with vast drops of rain, which were soon succeeded by round hail, and then by convex pieces of ice, which measured three inches in girth. Had it been as extensive as it was violent, and of any continuance (for it was very short), it must have ravaged all the neighbourhood. In the parish of *Hartley* it did some damage to one farm; but *Norton*, which lay in the center of the storm, was greatly injured; as was *Grange*, which lay next to it. It did but just reach to the middle of the village, where the hail broke my north windows, and all my garden-lights and hand-glasses, and many of my neighbours' windows. The extent of the storm was about two miles in length and one in breadth. We were just sitting down to dinner; but were soon diverted from our repast by the clattering of tiles and the jingling of glass. There fell at the same time prodigious torrents of rain on the farms above-mentioned, which occasioned a flood as violent as it was sudden; doing great damage to the meadows and fallows, by deluging the one and washing away the soil of the other. The hollow lane towards *Alton* was so torn and disordered as not to be passable till mended, rocks being removed that weighed 200 weight. Those that saw the effect which the great hail had on ponds and pools say that the dashing of the water made an extraordinary appearance, the froth and spray standing up in the air three feet above the surface. The rushing and roaring of the hail, as it approached, was truly tremendous.

Though the clouds at *South Lambeth*, near *London*, were at that juncture thin and light, and no storm was in sight, nor within hearing, yet the air was strongly electric; for the bells of an electric machine at that place rang repeatedly, and fierce sparks were discharged.

When I first took the present work in hand I proposed to have added an *Annus Historico-naturalis*, or the Natural History of the

Twelve Months of the Year; which would have comprised many incidents and occurrences that have not fallen in my way to be mentioned in my series of letters;—but, as Mr. *Aikin* of *Warrington* has lately published somewhat of this sort, and as the length of my correspondence has sufficiently put your patience to the test, I shall here take a respectful leave of you and natural history together;

And am,
With all due deference and regard,
Your most obliged,
And most humble servant,
GIL. WHITE.

Selborne, June 25, 1787.

THE

ANTIQUITIES

OF

SELBORNE,

IN THE

COUNTY OF SOUTHAMPTON.

- - - - - JUVAT IRE - - -
DESERTOSQUE VIDERE LOCOS - - - - - VIRGIL.

THE

ANTIQUITIES

OF

SELBORNE.

LETTER I.

It is reasonable to suppose that in remote ages this woody and mountainous district was inhabited only by bears and wolves. Whether the *Britons* ever thought it worthy their attention, is not in our power to determine; but we may safely conclude, from circumstances, that it was not unknown to the *Romans*. Old people remember to have heard their fathers and grandfathers say that, in dry summers and in windy weather, pieces of money were sometimes found round the verge of *Wolmer-pond;* and tradition had inspired the foresters with a notion that the bottom of that lake contained great stores of treasure. During the spring and summer of 1740 there was little rain; and the following summer also, 1741, was so uncommonly dry, that many springs and ponds failed, and this lake in particular, whose bed became as dusty as the surrounding heaths and wastes. This favourable juncture induced some of the forest-cottagers to begin a search, which was attended with such success, that all the labourers in the neighbourhood flocked to the spot, and with spades and hoes turned up great part of that large area. Instead of pots of coins, as they expected, they found great heaps, the one lying on the other, as if shot out of a bag; many of which were in good preservation. Silver and gold these inquirers expected to find; but their discoveries consisted solely

of many hundreds of *Roman* copper-coins, and some medallions, all of the lower empire. There was not much *virtù* stirring at that time in this neighbourhood; however, some of the gentry and clergy around bought what pleased them best; and some dozens fell to the share of the author.

The owners at first held their commodity at an high price; but, finding that they were not likely to meet with dealers at such a rate, they soon lowered their terms, and sold the fairest as they could. The coins that were rejected became current, and passed for farthings at the petty shops. Of those that we saw, the greater part were of *Marcus Aurelius*, and the Empress *Faustina*, his wife, the father and mother of *Commodus*. Some of *Faustina* were in high relief, and exhibited a very agreeable set of features, which probably resembled that lady, who was more celebrated for her beauty than for her virtues. The medallions in general were of a paler colour than the coins. To pretend to account for the means of their coming to this place would be spending time in conjecture. The spot, I think, could not be a *Roman* camp, because it is commanded by hills on two sides; nor does it shew the least traces of entrenchments; nor can I suppose that it was a *Roman* town, because I have too good an opinion of the taste and judgment of those polished conquerors to imagine that they would settle on so barren and dreary a waste.[1]

LETTER II.

That *Selborne* was a place of some distinction and note in the time of the *Saxons* we can give most undoubted proofs. But, as there are few if any accounts of villages before *Domesday*, it will be best to begin with that venerable record. "Ipse rex "tenet *Selesburne*. *Eddid* regina tenuit, et nunquam geldavit. "De isto manerio dono dedit rex *Radfredo* presbytero dimidiam "hidam cum ecclesia. Tempore regis *Edwardi* et post, valuit "duodecim solidos et sex denarios; modo octo solidos et quatuor

[1] ["A large pot of medals" was found in Wolmer pond about 1774, the dates ranging from Claudius to Commodus (see Letter from W. Sewell to Gilbert White, printed in Bell's edition, vol. ii., p. 393). In digging the foundations for Lord Selborne's buildings at Blackmoor, and in planting the estate, many more finds were made, among others, of two large earthenware vases containing about 30,000 Roman and Roman-British coins (see Lord Selborne's communication on the Roman-British antiquities of Selborne, Bell's edition, vol. ii., p. 378).]

"denarios." Here we see that *Selborne* was a royal manor; and that *Editha*, the queen of *Edward* the Confessor, had been lady of that manor; and was succeeded in it by the Conqueror; and that it had a church. Besides these, many circumstances concur to prove it to have been a *Saxon* village; such as the name of the place itself,[1] the names of many fields, and some families,[2] with a variety of words in husbandry and common life, still subsisting among the country people.

What probably first drew the attention of the *Saxons* to this spot was the beautiful spring or fountain called *Well-head*,[3] which induced them to build by the banks of that perennial current; for ancient settlers loved to reside by brooks and rivulets, where they could dip for their water without the trouble and expense of digging wells and of drawing.

It remains still unsettled among the antiquaries at what time tracts of land were first appropriated to the chase alone for the amusement of the sovereign. Whether our *Saxon* monarchs had any royal forests does not, I believe, appear on record; but the *Constitutiones de Foresta* of *Canute*, the Dane, are come down to us. We shall not therefore pretend to say whether *Wolmer-forest*

[1] *Selesburne*, *Seleburne*, *Selburn*, *Selbourn*, *Selborne*, and *Selborn*, as it has been variously spelt at different periods, is of *Saxon* derivation; for *Sel* signifies *great*, and *burn* torrens, a *brook* or *rivulet:* so that the name seems to be derived from the great perennial stream that breaks out at the upper end of the village.—*Sel* also signifies *bonus*, item, *fœcundus, fertilis.* "ðel-gæɲ-ƀun: *fœcunda graminis clausura; fertile pascuum:* a meadow in the parish of *Godelming* is still called *Sal-gars-ton.*" Lye's Saxon Dictionary, in the Supplement, by Mr. *Manning.*

[2] Thus the name of *Aldred* signifies *all-reverend*, and that of *Kemp* means a *soldier.* Thus we have a *church-litton*, or enclosure for dead bodies, and not a *church-yard:* there is also a *Culver-croft* near the *Grange-farm*, being the enclosure where the priory *pigeon-house* stood, from *culver* a pigeon. Again there are three steep pastures in this parish called the *Lithe*, from *Hlithe, clivus.* The wicker-work that binds and fastens down a hedge on the top is called *ether*, from *ether* an hedge. When the good women call their hogs they cry *sic, sic,** not knowing that *sic* is *Saxon*, or rather *Celtic*, for a hog. Coppice or brush wood our countrymen call *rise*, from *hris*, frondes; and talk of a load of *rise.* Within the author's memory the *Saxon* plurals, *housen* and *peason*, were in common use. But it would be endless to instance in every circumstance: he that wishes for more specimens must frequent a farmer's kitchen. I have therefore selected some words to show how familiar the *Saxon* dialect was to this district, since in more than seven hundred years it is far from being obliterated.

[3] *Well-head* signifies *spring-head*, and not a deep pit from whence we draw water. For particulars about which see Letter I. to Mr. *Pennant.*

* Σικα, porcus, apud *Lacones;* un Porceau chez les *Lacédémoniens:* ce mot a sans doute esté pris des *Celtes*, qui disoient *sic*, pour marquer un porceau. Encore aujourd'huy quand les *Bretons* chassent ces animaux, ils ne disent point autrement, que *sic, sic. Antiquité de la Nation, et de la Langue des Celtes, par Pezron.*

existed as a royal domain before the conquest. If it did not, we may suppose it was laid out by some of our earliest *Norman* kings, who were exceedingly attached to the pleasures of the chase, and resided much at *Winchester*, which lies at a moderate distance from this district. The *Plantagenet* princes seem to have been pleased with *Wolmer;* for tradition says that king *John* resided just upon the verge, at *Ward-le-ham*, on a regular and remarkable mount, still called *King John's Hill* and *Lodge Hill;* and *Edward* III. had a chapel in his park, or enclosure, at *Kingsley*.[1] *Humphrey*, duke of *Gloucester*, and *Richard*, duke of *York*, say my evidences, were both, in their turns, *wardens* of *Wolmer-forest;* which seems to have served for an appointment for the younger princes of the royal family, as it may again.

I have intentionally mentioned *Edward* III. and the dukes *Humphrey* and *Richard*, before king *Edward* II. because I have reserved, for the entertainment of my readers, a pleasant anecdote respecting that prince, with which I shall close this letter.

As *Edward* II. was hunting on *Wolmer-forest*, *Morris Ken*, of the kitchen, fell from his horse several times; at which accidents the king laughed immoderately: and, when the chase was over, ordered him twenty shillings;[2] an enormous sum for those days! Proper allowances ought to be made for the youth of this monarch, whose spirits also, we may suppose, were much exhilarated by the sport of the day: but, at the same time, it is reasonable to remark that, whatever might be the occasion of *Ken*'s first fall, the subsequent ones seem to have been designed. The scullion appears to have been an artful fellow, and to have seen the king's foible; which furnishes an early specimen of that his easy softness and facility of temper, of which the infamous *Gaveston* took such advantages, as brought innumerable calamities on the nation, and involved the prince at last in misfortunes and sufferings too deplorable to be mentioned without horror and amazement.

[1] The parish of *Kingsley* lies between, and divides *Wolmer-forest* from *Ayles Holt-forest*. See Letter IX. to Mr. *Pennant*.

[2] "Item, paid at the lodge at *Wolmer*, when the king was stag-hunting there, to *Morris Ken*, of the kitchen, because he rode before the king and often fell from his horse, at which the king laughed exceedingly—a gift, by command, of twenty shillings."—A MS. in possession of *Thomas Astle*, esq. containing the private expenses of *Edward* II.

LETTER III.

From the silence of *Domesday* respecting churches, it has been supposed that few villages had any at the time when that record was taken; but *Selborne*, we see, enjoyed the benefit of one: hence we may conclude, that this place was in no abject state even at that very distant period. How many fabrics have succeeded each other since the days of *Radfredus* the *presbyter*, we cannot pretend to say; our business leads us to a description of the present edifice, in which we shall be circumstantial.

Our church, which was dedicated to the *Virgin Mary*, consists of three ailes, and measures fifty-four feet in length by forty-seven in breadth, being almost as broad as it is long. The present building has no pretensions to antiquity; and is, as I suppose, of no earlier date than the beginning of the reign of *Henry* VII. It is perfectly plain and unadorned, without painted glass, carved work, sculpture, or tracery. But when I say it has no claim to antiquity, I would mean to be understood of the fabric in general; for the pillars which support the roof, are undoubtedly old, being of that low, squat, thick order, usually called *Saxon*. These, I should imagine, upheld the roof of a former church, which, falling into decay, was rebuilt on those massy props, because their strength had preserved them from the injuries of time.[1] Upon these rest blunt *gothic* arches, such as prevailed in the reign above-mentioned, and by which, as a criterion, we would prove the date of the building.

At the bottom of the south aile, between the west and south doors, stands the font, which is deep and capacious, and consists of three massy round stones, piled one on another, without the least ornament or sculpture: the cavity at the top is lined with lead, and has a pipe at bottom to convey off the water after the sacred ceremony is performed.

The east end of the south aile is called the *South Chancel*, and, till within these thirty years, was divided off by old carved *gothic* frame-work of timber, having been a private chantry. In this opinion we are more confirmed by observing two *gothic* niches within the space, the one in the east wall and the other in the south, near which there probably stood images and altars.

[1] In the same manner, to compare great things with small, did *Wykeham*, when he new-built the cathedral of *Winchester*, from the tower westward, apply to his purpose the old piers or pillars of Bishop *Walkelin*'s church, by blending *Saxon* and *Gothic* architecture together. See *Lowth*'s Life of Wykeham.

In the middle aile there is nothing remarkable: but I remember when it's beams were hung with garlands in honour of young women of the parish, reputed to have died virgins; and recollect to have seen the clerk's wife cutting, in white paper, the resemblances of gloves, and ribbons to be twisted into knots and roses, to decorate these memorials of chastity. In the church of *Faringdon*, which is the next parish, many garlands of this sort still remain.

The north aile is narrow and low, with a sloping ceiling, reaching within eight or nine feet of the floor. It had originally a flat roof covered with lead, till, within a century past, a churchwarden, stripping off the lead, in order, as he said, to have it mended, sold it to a plumber, and ran away with the money. This aile has no door, for an obvious reason; because the north-side of the churchyard, being surrounded by the vicarage-garden, affords no path to that side of the church. Nothing can be more irregular than the pews of this church, which are of all dimensions and heights, being patched up according to the fancy of the owners: but whoever nicely examines them will find that the middle aile had, on each side, a regular row of benches of solid oak, all alike, with a low back-board to each. These we should not hesitate to say are coeval with the present church: and especially as it is to be observed that, at their ends, they are ornamented with carved blunt *gothic* niches, exactly correspondent to the arches of the church, and to a niche in the south wall. The south aile also has a row of these benches; but some are decayed through age, and the rest much disguised by modern alterations.

At the upper end of this aile, and running out to the north, stands a transept, known by the name of the *North Chancel*, measuring twenty-one feet from south to north, and nineteen feet from east to west: this was intended, no doubt, as a private chantry; and was also, till of late, divided off by a *gothic* framework of timber. In it's north wall, under a very blunt *gothic* arch, lies perhaps the founder of this edifice, which, from the shape of it's arch, may be deemed no older than the latter end of the reign of *Henry* VII. The tomb was examined some years ago, but contained nothing except the scull and thigh-bones of a large tall man, and the bones of a youth or woman, lying in a very irregular manner, without any escutcheon or other token to ascertain the names or rank of the deceased. The grave was very shallow, and lined with stone at the bottom and on the sides.[1]

[1] [This tomb has since been removed.]

From the east wall project four stone brackets, which I conclude supported images and crucifixes. In the great thick pilaster, jutting out between this transept and the chancel, there is a very sharp *gothic* niche, of older date than the present chantry or church. But the chief pieces of antiquity are two narrow stone coffin-lids, which compose part of the floor, and lie from west to east, with the very narrow ends eastward: these belong to remote times; and, if originally placed here, which I doubt, must have been part of the pavement of an older transept. At present there are no coffins under them, whence I conclude they have been removed to this place from some part of a former church. One of these lids is so eaten by time, that no sculpture can be discovered upon it; or, perhaps, it may be the wrong side uppermost; but on the other, which seems to be of stone of a closer and harder texture, is to be discerned a *discus*, with a cross on it, at the end of a staff or rod, the well-known symbol of a *Knight-Templar*.[1]

This order was distinguished by a red cross on the left shoulder of their cloak, and by this attribute in their hand. Now, if these stones belonged to *Knights Templars*, they must have lain here many centuries; for this order came into England early in the reign of king *Stephen* in 1113; and was dissolved in the time of *Edward* II. in 1312, having subsisted only one hundred and ninety-nine years. Why I should suppose that *Knights Templars* were occasionally buried at this church, will appear in some future letter, when we come to treat more particularly concerning the property they possessed here, and the intercourse that subsisted between them and the *priors* of *Selborne*.

We must now proceed to the chancel, properly so called, which seems to be coeval with the church, and is in the same plain unadorned style, though neatly kept. This room measures thirty-one feet in length, and sixteen feet and an half in breadth, and is wainscoted all round, as high as to the bottom of the windows. The space for the communion table is raised two steps above the rest of the floor, and railed in with oaken balusters. Here I shall say somewhat of the windows of the chancel in particular, and of the whole fabric in general. They are mostly of that simple and unadorned sort called *Lancet*, some single, some double, and some in triplets. At the east end of the chancel are two of a moderate size, near each other; and in

[1] See *Dugdale, Monasticon Anglicanum*, Vol. II. where there is a fine engraving of a *Knight-Templar* by *Hollar*.

the north wall two very distant small ones, unequal in length and height: and in the south wall are two, one on each side of the chancel door, that are broad and squat, and of a different order. At the east end of the south aile of the church there is a large lancet-window in a triplet; and two very small, narrow, single ones in the south wall, and a broad squat window beside, and a double lancet one in the west end; so that the appearance is very irregular. In the north aile are two windows, made shorter when the roof was sloped; and in the north transept a large triple window, shortened at the time of a repair in 1721; when over it was opened a round one of considerable size, which affords an agreeable light, and renders that chantry the most cheerful part of the edifice.

The church and chancels have all coved roofs, ceiled about the year 1683; before which they were open to the tiles and shingles, showing the naked rafters, and threatening the congregation with the fall of a spar, or a blow from a piece of loose mortar.

On the north wall of the chancel is fixed a large oval white marble monument, with the following inscription; and at the foot of the wall, over the deceased, and inscribed with his name, age, arms, and time of death, lies a large slab of black marble:

Prope hunc parietem sepelitur
GILBERTUS WHITE, SAMSONIS WHITE, de
Oxon. militis filius tertius, Collegii Magdale-
-nensis ibidem alumnus, & socius. Tandem faven-
-te collegio ad hanc ecclesiam promotus; ubi primæ-
-vâ morum simplicitate, et diffusâ erga omnes bene-
-volentiâ feliciter consenuit.
Pastor fidelis, comis, affabilis,
Maritus, et pater amantissimus,
A conjuge invicem, et liberis, atque
A parochianis impensè dilectus.
Pauperibus ita beneficus
ut decimam partem censûs
moribundus
piis usibus consecravit.
Meritis demum juxta et annis plenus
ex hac vitâ migravit Feb. 13°.
anno salutis 172$\frac{7}{8}$
Ætatis suæ 77.
Hoc posuit Rebecca
Conjux illius mæstissima,
mox secutura.

On the same wall is newly fixed a small square table-monument of white marble, inscribed in the following manner.

Sacred to the memory
of the Rev^d. ANDREW ETTY, B. D.
23 Years Vicar of this parish:
In whose character
The conjugal, the parental, and the sacerdotal virtues
were so happily combined
as to deserve the imitation of mankind.
And if in any particular he followed more invariably
the steps of his blessed Master,
It was in his humility.
His parishioners,
especially the sick and necessitous,
as long as any traces of his memory shall remain,
must lament his death.
To perpetuate such an example, this stone is erected;
as while living he was a preacher of righteousness,
so, by it, he being dead yet speaketh.
He died April 8^th. 1784. Aged 66 years.[1]

[1] [It was not until long after the *Antiquities of Selborne* was written, that any knowledge of ecclesiastical architecture became general; and the account of Selborne church in the text is a remarkable proof of the ignorance which at that time prevailed both with regard to the principles of church-building, and the details in which those principles were developed. The church at Selborne still retains a large portion of the original structure, and exhibits an interesting and consistent example of the architecture of the period of its erection, which is sufficiently marked to preclude any considerable error. The arches, the pillars with their bases and capitals, the windows which remain, and other details, point to the close of the 12th or the beginning of the 13th century, and the reign of Henry III. as the true date of the present structure, which is therefore of the Early English period, just as the Norman style was becoming extinct. I can find no traces of an earlier building remaining, although it is very clear that at the time when Domesday book was composed there was a church here.

The pillars of the nave are of that simple and massive form which belongs to the transition from the Norman to the Early English style. The base of the pillars is a simple square plinth with round mouldings, on which rests the massive body of the pillar, the diameter of which is 2 ft. 7 in., and its height from base to capital 5 ft. 7 in. The capital is square, plain and bold; and from it springs a nearly equilateral pointed arch of 10 ft. span. There is still remaining in the south wall to the west of the doorway a single well-proportioned lancet window; and there is a double one of nearly similar proportions in the west wall. The south aisle terminates eastward in what was a chapel, dedicated probably to the tutelar saint of the church, with a fine well-proportioned triplet window, to the left of which is a handsome niche, which doubtless contained a figure of the saint; and on its base is a neat strip of diaper-work. In the south wall of this chantry is a piscina belonging to the altar of the chapel. Of this piscina Gilbert White makes the curious mistake of supposing that it formerly held a statue of some saint. Although all traces of a screen separating this chancel from the aisle have long since disappeared, yet its boundary is very clearly indicated by a stone step which raises it a few inches above the level of the aisle. The string-course, extending along the east, south, and west walls of the south aisle, is simple and very perfect. The mouldings of the south doorway are very beautiful and nearly perfect. The door itself is solid, and the hinges of a good but not elaborate pattern. The north transept, described in the text, is evidently more recent than the body of the church. Of the four brackets mentioned, three are similar in form, the centre one being placed higher than the others. These certainly supported figures. The fourth bracket has no relation to the others, is placed nearer to the chancel, and is of ruder form. In

LETTER IV.

We have now taken leave of the inside of the church, and shall pass by a door at the west end of the middle aile into the belfry. This room is part of a handsome square embattled tower of forty-five feet in height, and of much more modern date than the church; but old enough to have needed a thorough repair in 1781, when it was neatly stuccoed at a considerable expense, by a set of workmen who were employed on it for the greatest part of the summer. The old bells, three in number, loud and out of tune, were taken down in 1735, and cast into four; to which *Sir Simeon Stuart*, the grandfather of the present baronet, added a fifth at his own expense: and, bestowing it in the name of his favourite daughter Mrs. *Mary Stuart*, caused it to be cast with the following motto round it:

"Clara puella dedit, dixitque mihi esto Maria:
"Illius et laudes nomen ad astra sono."

The day of the arrival of this tuneable peal was observed as an high festival by the village, and rendered more joyous, by an order from the donor, that the treble-bell should be fixed bottom upward in the ground, and filled with punch, of which all present were permitted to partake.

The porch of the church, to the south, is modern, and would not be worthy attention did it not shelter a fine sharp *gothic* door-way. This is undoubtedly much older than the present fabric; and, being found in good preservation, was worked into the wall, and is the grand entrance into the church: nor are the folding-doors to be passed over in silence; since, from their thick and clumsy structure, and the rude flourished-work of their hinges, they may possibly be as ancient as the door-way itself.

the wall between the transept and the chancel there is the appearance of a small door having formerly existed, which from its position must have formed the entrance to the rood-loft; and I think it possible that the fourth bracket may have supported the stairs which led to it. There is a good piscina belonging to this transept-chantry, of later character than that in the south wall. In the north wall of the transept are the remains of a large window of three lights, the mullions of which show it to be of a later date than the church, probably towards the latter part of the century. This fine window has been curtailed of its fair proportions by the bottom of it being blocked up, and the whole upper part being cut off by a heavy beam carried quite across the wall, above which is a hideous circular window. The chancel of the church itself retains very little of its original features, and has no remains of a piscina or any other adjuncts of an altar; but there is in the north wall a small lancet window, and another in the vestry.—*Bell.*]

The whole roof of the south aile, and the south-side of the roof of the middle aile, is covered with oaken shingles instead of tiles, on account of their lightness, which favours the ancient and crazy timber-frame. And, indeed, the consideration of accidents by fire excepted, this sort of roofing is much more eligible than tiles. For shingles well seasoned, and cleft from quartered timber, never warp, nor let in drifting snow; nor do they shiver with frost; nor are they liable to be blown off, like tiles; but, when well nailed down, last for a long period, as experience has shown us in this place, where those that face to the north are known to have endured, untouched, by undoubted tradition for more than a century.

Considering the size of the church, and the extent of the parish, the church-yard is very scanty; and especially as all wish to be buried on the south-side, which is become such a mass of mortality that no person can be there interred without disturbing or displacing the bones of his ancestors. There is reason to suppose that it once was larger, and extended to what is now the vicarage court and garden; because many human bones have been dug up in those parts several yards without the present limits. At the east end are a few graves; yet none till very lately on the north-side; but, as two or three families of best repute have begun to bury in that quarter, prejudice may wear out by degrees, and their example be followed by the rest of the neighbourhood.

In speaking of the church, I have all along talked of the east and west-end, as if the chancel stood exactly true to those points of the compass; but this is by no means the case, for the fabric bears so much to the north of the east that the four corners of the tower, and not the four sides, stand to the four cardinal points. The best method of accounting for this deviation seems to be, that the workmen, who probably were employed in the longest days, endeavoured to set the chancels to the rising of the sun.

Close by the church, at the west end, stands the vicarage-house; an old, but roomy and convenient edifice. It faces very agreeably to the morning sun, and is divided from the village by a neat and cheerful court. According to the manner of old times, the hall was open to the roof; and so continued probably, till the vicars became family-men, and began to want more conveniences; when they flung a floor across, and, by partitions, divided the space into chambers. In this hall we remember a date, some time in the reign of *Elizabeth;* it was over the door that leads to the stairs.

Behind the house is a garden of an irregular shape, but well laid out; whose terrace commands so romantic and picturesque a prospect, that the first master in landscape might contemplate it with pleasure, and deem it an object well worthy of his pencil.

LETTER V.

In the church-yard of this village is a *yew-tree*, whose aspect bespeaks it to be of a great age: it seems to have seen several centuries, and is probably coeval with the church, and therefore may be deemed an antiquity: the body is squat, short, and thick, and measures twenty-three feet in the girth, supporting an head of suitable extent to it's bulk. This is a male tree, which in the spring sheds clouds of dust, and fills the atmosphere around with it's farina.

As far as we have been able to observe, the males of this species become much larger than the females; and it has so fallen out that most of the yew-trees in the churchyards of this neighbourhood are males: but this must have been matter of mere accident, since men, when they first planted yews, little dreamed that there were sexes in trees.

In a yard, in the midst of the street, till very lately grew a middle-sized female tree of the same species, which commonly bore great crops of berries. By the high winds usually prevailing about the autumnal equinox, these berries, then ripe, were blown down into the road, where the hogs ate them. And it was very remarkable, that, though barrow-hogs and young sows found no inconvenience from this food, yet milch-sows often died after such a repast: a circumstance that can be accounted for only by supposing that the latter, being much exhausted and hungry, devoured a larger quantity.

While mention is making of the bad effects of yew-berries, it may be proper to remind the unwary that the twigs and leaves of yew, though eaten in a very small quantity, are certain death to horses and cows, and that in a few minutes. An horse tied to a yew-hedge, or to a faggot-stack of dead yew, shall be found dead before the owner can be aware that any danger is at hand: and the writer has been several times a sorrowful witness to losses of this kind among his friends; and in the island of *Ely* had once the mortification to see nine young steers or bullocks of his own all lying dead in an heap from browzing a little on an hedge of

yew in an old garden, into which they had broken in snowy weather.[1] Even the clippings of a yew-hedge have destroyed a whole dairy of cows when thrown inadvertently into a yard. And yet sheep and turkies, and, as park-keepers say, deer, will crop these trees with impunity.

Some intelligent persons assert that the branches of yew, while *green*, are not noxious; and that they will kill only when *dead* and *withered*, by lacerating the stomach: but to this assertion we cannot by any means assent, because, among the number of cattle that we have known fall victims to this deadly food, not one has been found, when it was opened, but had a lump of *green* yew in it's paunch. True it is, that yew-trees stand for twenty years or more in a field, and no bad consequences ensue: but at some time or other cattle, either from wantonness when full, or from hunger when empty, (from both which circumstances we have seen them perish), will be meddling, to their certain destruction; the yew seems to be a very improper tree for a pasture-field.

Antiquaries seem much at a loss to determine at what period this tree first obtained a place in church-yards. A statute passed A.D. 1307 and 35 *Edward* I. the title of which is "Ne rector arbores in cemeterio prosternat". Now if it is recollected that we seldom see any other very large or ancient tree in a church-yard but yews, this statute must have principally related to this species of tree; and consequently their being planted in church-yards is of much more ancient date than the year 1307.

As to the use of these trees, possibly the more respectable parishioners were buried under their shade before the improper custom was introduced of burying within the body of the church, where the living are to assemble. *Deborah, Rebekah*'s nurse,[2] was buried under an oak; the most honourable place of interment probably next to the cave of *Machpelah*,[3] which seems to have been appropriated to the remains of the patriarchal family alone.

The farther use of yew-trees might be as a screen to churches, by their thick foliage, from the violence of winds; perhaps also for the purpose of archery, the best long bows being made of that material: and we do not hear that they are planted in the church-yards of other parts of *Europe*, where long bows were not so much in use. They might also be placed as a shelter to the congregation assembling before the church-doors were opened, and as an

[1] [This was in 1746, when Gilbert White had gone to Thorney as executor to an uncle Thomas, whose property was left to Gilbert's brother Thomas.]

[2] Gen. xxxv, 8.

[3] Gen. xxiii, 9.

emblem of mortality by their funereal appearance. In the south of *England* every church-yard almost has it's tree, and some two; but in the north, we understand, few are to be found.

The idea of R. C. that the *yew-tree* afforded it's branches instead of palms for the processions on *Palm-Sunday*, is a good one, and deserves attention. See Gent. Mag. Vol. L. p. 128.

LETTER VI.

THE living of *Selborne* was a very small vicarage; but, being in the patronage of *Magdalen-college*, in the university of *Oxford*, that society endowed it with the great tithes of *Selborne*, more than a century ago: and since the year 1758 again with the great tithes of *Oakhanger*, called *Bene's parsonage:* so that, together, it is become a respectable piece of preferment, to which one of the fellows is always presented. The vicar holds the great tithes, by lease, under the college. The great disadvantage of this living is, that it has not one foot of glebe near home.[1]

ITS PAYMENTS ARE,	£	s.	d.
King's books — — — —	8	2	1
Yearly tenths — — — —	0	16	2½
Yearly procurations for *Blackmore* and *Oakhanger Chap:* with acquit: — — —	0	1	7
Selborne procurations and acquit: — —	0	9	0

I am unable to give a complete list of the vicars of this parish till towards the end of the reign of queen *Elizabeth;* from which period the registers furnish a regular series.

In *Domesday* we find thus—"De isto manerio dono dedit Rex "*Radfredo* presbytero dimidiam hidam cum ecclesia." So that before *Domesday*, which was compiled between the years 1081 and 1086, there[2] was an officiating minister at this place.

After this, among my documents, I find occasional mention of a vicar here and there: the first is

Roger, instituted in 1254.
In 1410 *John Lynne* was vicar of *Selborne*.
In 1411 *Hugo Tybbe* was vicar.

[1] At *Bene*'s, or *Bin*'s *parsonage* there is a house and stout barn, and seven acres of glebe. *Bene*'s parsonage is three miles from the church.
[2] [*Here* in orig.]

The presentations to the vicarage of *Selborne* generally ran in the name of the prior and the convent; but *Tybbe* was presented by prior *John Wynechestre* only.

June 29, 1528, *William Fisher*, vicar of *Selborne*, resigned to *Miles Peyrson*.

1594, *William White* appears to have been vicar to this time. Of this person there is nothing remarkable, but that he hath made a regular entry twice in the register of *Selborne* of the funeral of *Thomas Cowper*, bishop of *Winchester*, as if he had been buried at *Selborne*; yet this learned prelate, who died 1594, was buried at *Winchester*, in the cathedral, near the episcopal throne.[1]

1595, *Richard Boughton*, vicar.

1596, *William Inkforbye*, vicar.

May 1606, *Thomas Phippes*, vicar.

June 1631, *Ralph Austine*, vicar.

July 1632, *John Longworth*. This unfortunate gentleman, living in the time of *Cromwell*'s usurpation, was deprived of his preferment for many years, probably because he would not take the league and covenant: for I observe that his father-in-law, the Reverend *Jethro Beal*, rector of *Faringdon*, which is the next parish, enjoyed his benefice during the whole of that unhappy period. *Longworth*, after he was dispossessed, retired to a little tenement about one hundred and fifty yards from the church, where he earned a small pittance by the practice of physic. During those dismal times it was not uncommon for the deposed clergy to take up a medical character; as was the case in particular, I know, with the Reverend Mr. *Yalden*, rector of *Compton*, near *Guildford*, in the county of *Surrey*. Vicar *Longworth* used frequently to mention to his sons, who told it to my relations, that, the *Sunday* after his deprivation, his puritanical successor[2] stepped into

[1] See *Godwin* de præsulibus, folio *Cant.* 1743, page 239.

[2] [John Ferrol, M.A., Fellow of Magdalen College, Oxford. That the interloper had his turn of persecution on the change of Government appears from the following account taken from Calamy's *Nonconformists' Memorial:*—"He was an humble, peaceable, laborious divine; prudent and inoffensive in his conduct. Of an healthful constitution, and of a meek and even temper, not much resenting the injuries of his adversaries. He was of an active disposition, and, being a noted botanist and herbalist, made his garden his diversion when his labouring mind called for a relaxation from his studies. Upon Mr. L(ongworth)'s sequestration he was settled in his place; but after the Restoration he was advised to resign his living to the former incumbent, which he accordingly did, and then retired to Guildford, in Surrey, where he kept boarders who went to the free school. When the corporation oath was imposed, not being satisfied to take it, he removed to Farnham. On January 14, 1669, he was taken up near Godalming, and sent to the Marshalsea in Southwark, for having been found within five miles of the corporation of Guildford

the pulpit with no small petulance and exultation; and began his sermon from *Psalm* xx. 8. "*They are brought down and fallen; "but we are risen and stand upright.*" This person lived to be restored in 1660, and continued vicar for eighteen years; but was so impoverished by his misfortunes, that he left the vicarage-house and premises in a very abject and dilapidated state.

July 1678. *Richard Byfield*, who left eighty pounds by will, the interest to be applied to apprentice out poor children: but this money, lent on private security, was in danger of being lost, and the bequest remained in an unsettled state for near twenty years, till 1700; so that little or no advantage was derived from it. About the year 1759 it was again in the utmost danger by the failure of a borrower; but, by prudent management, has since been raised to one hundred pounds stock in the three per cents reduced. The trustees are the vicar and the renters or owners of *Temple, Priory, Grange, Blackmore,* and *Oakhanger-house,* for the time being. This gentleman seemed inclined to have put the vicarial premises in a comfortable state; and began, by building a solid stone wall round the front-court, and another in the lower yard, between that and the neighbouring garden; but was interrupted by death from fulfilling his laudable intentions.

April 1680, *Barnabas Long* became vicar.

June 1681. This living was now in such low estimation in *Magdalen-college,* that it descended to a junior fellow, *Gilbert White,* M.A.[1] who was instituted to it in the thirty-first year of his age. At his first coming he ceiled the chancel, and also floored and wainscoted the parlour and hall, which before were paved with stone, and had naked walls; he enlarged the kitchen and brewhouse, and dug a cellar and well: he also built a large new barn in the lower yard, removed the hovels in the front court, which he laid out in walks and borders; and entirely planned the back garden, before a rude field with a stone-pit in the midst of it. By his will he gave and bequeathed "the sum of forty

and Godalming, and also for preaching at Godalming. He continued six months in prison, and sometimes said that this was one of the most comfortable parts of his life, through the kindness of friends whom God raised up to administer relief to him in his troubles." It appears that Bishop Morley was very kind to him, and certainly Ferrol was no bigot, as "his custom was to go to the public church as his people also did". After some changes of residence he finally "retired to Lymington, in Hampshire, where he was not idle, but preached frequently . . . till by a gentle decay, the candle of life burning down to the socket, he expired, not with a stink, but a sweet savour . . . in the 80th year of his age."—*Bell.*]

[1] The author's grandfather and godfather.

"pounds to be laid out in the most necessary repairs of the "church; that is, in strengthening and securing such parts as "seem decaying and dangerous". With this sum two large buttresses were erected to support the east end of the south wall of the church; and the gable-end wall of the west end of the south aile was new built from the ground.

By his will also he gave "One hundred pounds to be laid "out on lands; the yearly rents whereof shall be employed in "teaching the poor children of *Selbourn* parish to read and write, "and say their prayers and catechism, and to sew and knit:—and "be under the direction of his executrix as long as she lives; "and, after her, under the direction of such of his children and "their issue, as shall live in or within five miles of the said "parish: and on failure of any such, then under the direction "of the vicar of *Selbourn* for the time being; but still to the "uses above-named". With this sum was purchased, of *Thomas Turville*, of *Hawkeley*, in the county of *Southampton*, yeoman, and *Hannah* his wife, *two closes* of freehold land, commonly called *Collier's*, containing, by estimation, *eleven* acres, lying in *Hawkeley* aforesaid. These closes are let at this time, 1785, on lease, at the rate of three pounds by the year.

This vicar also gave by will *two hundred pounds* towards the repairs of the highways[1] in the parish of *Selborne*. That sum was carefully and judiciously laid out in the summer of the year 1730, by his son *John White*,[2] who made a solid and firm causey from *Rood-green*, all down *Honey-lane*, to a farm called *Oak-woods*, where the sandy soil begins. This miry and gulfy lane was chosen as worthy of repair, because it leads to the forest, and thence through the *Holt* to the town of *Farnham* in *Surrey*, the only market in those days for men who had wheat to sell in this neighbourhood. This causey was so deeply bedded with stone, so properly raised above the level of the soil, and so well drained, that it has, in some degree, withstood fifty-four years of neglect and abuse; and might, with moderate attention, be rendered a solid and comfortable road. The space from *Rood-green* to *Oak-woods* measures about three quarters of a mile.

In 1727, *William Henry Cane*, B.D. became vicar; and, among several alterations and repairs, new-built the back front of the vicarage-house.

[1] "Such legacies were very common in former times, before any effectual laws were made for the repairs of highways." Sir John Cullum's Hawsted, p. 15.

[2] [Father of Gilbert White.]

On *February* 1, 1740, *Duncombe Bristowe*, D.D. was instituted to this living. What benefactions this vicar bestowed on the parish will be best explained by the following passages from his will:—"*Item*, I hereby give and bequeath to the minister and "churchwardens of the parish of *Selbourn*, in the county of *South-*"*ampton*, a mahogany table, which I have ordered to be made "for the celebration of the Holy Communion; and also the sum "of thirty pounds, in trust, to be applied in manner following; "that is, ten pounds towards the charge of erecting a gallery at "the west end of the church; and ten pounds to be laid out for "cloathing, and such like necessaries, among the poor (and es-"pecially among the ancient and infirm) of the said parish: and "the remaining ten pounds to be distributed in bread, at twenty "shillings a week, at the discretion of *John White*, esq. or any of "his family, who shall be resident in the said parish."

On *November* 12, 1758, *Andrew Etty*, B.D. became vicar. Among many useful repairs he new-roofed the body of the vicarage-house; and wainscoted, up to the bottom of the windows, the whole of the chancel; to the neatness and decency of which he always paid the most exact attention.

On *September* 25, 1784, *Christopher Taylor*, B.D. was inducted into the vicarage of *Selborne*.

LETTER VII.

I SHALL now proceed to the *Priory*, which is undoubtedly the most interesting part of our history.

The *Priory* of *Selborne* was founded by *Peter de la Roche*, or *de Rupibus*,[1] one of those accomplished foreigners that resorted to the court of king *John*, where they were usually caressed, and met with a more favourable reception than ought, in prudence, to have been shown by any monarch to strangers. This adventurer was a *Poictevin* by birth, had been bred to arms in his youth, and distinguished by knighthood. Historians all agree not to speak very favourably of this remarkable man; they allow that he was possessed of courage and fine abilities, but then they charge him with arbitrary principles, and violent conduct. By his insinuating manners he soon rose high in the favour of *John*; and in 1205, early in the reign of that prince, was appointed bishop of

[1] See *Godwin* de Præsulibus Angliæ. Folio. London, 1743, p. 217.

Winchester. In 1214 he became lord chief justiciary of *England*, the first magistrate in the state, and a kind of viceroy, on whom depended all the civil affairs in the kingdom. After the death of *John*, and during the minority of his son *Henry*, this prelate took upon him the entire management of the realm, and was soon appointed protector of the king and kingdom.

The barons saw with indignation a stranger possessed of all the power and influence, to part of which they thought they had a claim; they therefore entered into an association against him, and determined to wrest some of that authority from him which he had so unreasonably usurped. The bishop discerned the storm at a distance; and, prudently resolving to give way to that torrent of envy which he knew not how to withstand, withdrew quietly to the Holy Land, where he resided some time.

At this juncture a very small part of *Palestine* remained in the hands of the Christians: they had been by *Saladine* dispossessed of *Jerusalem*, and all the internal parts, near forty years before; and with difficulty maintained some maritime towns and garrisons: yet the busy and enterprising spirit of *de Rupibus* could not be at rest; he distinguished himself by the splendour and magnificence of his expenses, and amused his mind by strengthening fortresses and castles, and by removing and endowing of churches. Before his expedition to the east he had signalized himself as a founder of convents, and as a benefactor to hospitals and monasteries.

In the year 1231 be returned again to *England;* and the very next year, in 1232, began to build and endow the PRIORY of SELBORNE. As this great work followed so close upon his return, it is not improbable that it was the result of a vow made during his voyage; and especially as it was dedicated to the *Virgin Mary.* Why the bishop made choice of *Selborne* for the scene of his munificence can never be determined now: it can only be said that the parish was in his diocese, and lay almost midway between *Winchester* and *Farnham*, or *South Waltham* and *Farnham;* from either of which places he could without much trouble overlook his workmen, and observe what progress they made; and that the situation was retired, with a stream running by it, and sequestered from the world, amidst woods and meadows, and so far proper for the site of a religious house.[1]

[1] The institution at *Selborne* was a priory of *Black-Canons* of the order of *St. Augustine*, called also *Canons-Regular. Regular-Canons* were such as lived in a conventual manner, under one roof, had a common refectory and dormitory, and

The first person with whom the founder treated about the purchase of land was *Jacobus de Achangre*, or *Ochangre*, a gentleman of property who resided at that hamlet; and, as appears, at the house now called *Oakhanger-house*. With him he agreed for a croft, or little close of land, known by the name of *La liega*, or *La lyge*, which was to be the immediate site of the *Priory*.

De Achangre also accommodated the bishop at the same instant with three more adjoining crofts, which for a time was all the footing that this institution obtained in the parish. The seller in the conveyance says "Warantizabimus, defendemus, et acquieta-"bimus[1] *contra omnes gentes*"; *viz.* "We will warrant the thing "sold against all claims from any quarter". In modern conveyancing this would be termed a covenant for *further assurance*. Afterwards is added—"Pro hac autem donacione, &c. dedit mihi "pred. Episcopus sexdecem marcas argenti in *Gersumam*": i. e. "the bishop gave me sixteen silver marks as a consideration for "the thing purchased".

As the grant from *Jac. de Achangre* was without date,[2] and the next is circumstanced in the same manner, we cannot say exactly what interval there was between the two purchases; but we find that *Jacobus de Nortun*, a neighbouring gentleman, also soon sold to the bishop of *Winchester* some adjoining grounds, through which our stream passes, that the priory might be accommodated with a *mill*, which was a common necessary appendage to every manor: he also allowed access to these lands by a road for carts and waggons.—"*Jacobus de Nortun* concedit *Petro Winton* episcopo "totum cursum aque que descendit de *Molendino de Durton* usq; ad "boscum *Will. Mauduit*, et croftam terre vocat: *Edriche croft*, cum "extensione ejusdem et abuttamentis; ad fundandam domum "religiosam de ordine *Sti. Augustini*. Concedit etiam viam ad "carros, et caretas," &c. This vale, down which runs the brook, is now called the *Long Lithe, or Lythe*. Bating the following

were bound by vows to observe the rules and statutes of their order: in fine, they were a kind of religious, whose discipline was less rigid than the *monks'*. The chief rule of these *canons* was that of *St. Augustine*, who was constituted bishop of *Hippo*, A. D. 395: but they were not brought into *England* till after the conquest; and seem not to have obtained the appellation of *Augustine canons* till some years after. Their habit was a long black *cassock*, with a white *rochet* over it; and over that a black *cloak and hood*. The monks were always shaved: but these canons wore their hair and beards, and caps on their heads. There were of these *canons*, and women of the same order called *Canonesses*, about 175 houses.

[1] [*Æquietabimus* in orig.]

[2] The custom of affixing dates to deeds was not become general in the reign of *Henry* III.

particular expression, this grant runs much in the style of the former; "Dedit mihi episcopus predictus triginta quinque marcas "argenti *ad me acquietandum versus Judæos*".—That is, "the bishop "advanced me thirty-five marks of silver to pay my debts to the "jews," who were then the only lenders of money.

Finding himself still streightened for room, the founder applied to his royal master, *Henry*, who was graciously pleased to bestow certain lands in the manor of *Selborne* on the new priory of his favourite minister. These grounds had been the property of *Stephen de Lucy;* and abutting upon the narrow limits of the convent, became a very commodious and agreeable acquisition. This grant, I find, was made on *March* the 9th, in the eighteenth year of *Henry, viz.* 1234, being two years after the foundation of the monastery. The royal donor bestowed his favour with a good grace, by adding to it almost every immunity and privilege that could have been specified in the law-language of the times.—"Quare volumus prior, &c. habeant totam terram, &c. cum omni-"bus libertatibus in bosco et plano, in viis et semitis, pratis et "pascuis; aquis et piscariis; infra burgum, et extra burgum cum "soka et saca, Thol et Them, Infangenethef et Utfangenethef, et "hamsocne et blodwite, et pecunia que dari solet pro murdro et "forstal, et flemenestrick, et cum quietancia de omni scotto et "geldo, et de omnibus auxiliis regum, vice comitum, et omn: "ministralium suorum; et hidagio et exercitibus, et scutagiis, et "tallagiis, et shiris et hundredis, et placitis et querelis, et warda "et wardpeny, et opibus castellorum et pontium, et clausuris par-"corum, et omni carcio et sumagio, et domor: regal: edificatione, "et omnimoda reparatione, et cum omnibus aliis libertatibus." This grant was made out by *Richard* bishop of *Chichester*, then chancellor, at the town of *Northampton*, before the lord chief justiciary, who was the founder himself.

The *charter* of foundation of the *Priory*, dated 1233, comes next in order to be considered; but being of some length, I shall not interrupt my narrative by placing it here; and therefore refer the reader to the Appendix, N° I. This my copy, taken from the original, I have compared with *Dugdale*'s copy, and find that they perfectly agree; except that in the latter the preamble and the names of the witnesses are omitted. Yet I think it proper to quote a passage from this charter—"Et ipsa domus religiosa *a* "*cujuslibet alterius domûs religiosæ subjectione libera* permaneat, et "in omnibus *absoluta*"—to shew how much *Dugdale* was mistaken when he inserted *Selborne* among the *alien priories;* forgetting

that this disposition of the convent contradicted the grant he had published. In the *Monasticon Anglicanum* in English, p. 119, is part of his catalogue of *alien priories*, suppressed 2 *Henry* V. *viz.* 1414, where may be seen as follows,

S.
Sele, Sussex.
SELEBURN.
Shirburn.

This appeared to me from the first to have been an oversight, before I had seen my authentic evidences. For *priories alien*, a few *conventual* ones excepted, were little better than *granges* to foreign abbies; and their priors little more than bailiffs, removable at will: whereas the *priory* of *Selborne* possessed the valuable estates and manors of *Selborne, Achangre, Norton, Brompden, Bassinges, Basingstoke*, and *Natele;* and the prior challenged the right of *Pillory, Thurcet*, and *Furcas*, and every manerial privilege.

I find next a grant from *Jo. de Venur*, or *Venuz*, to the prior of *Selborne*—"de tota mora [a moor or bog] ubi *Beme* oritur, usque "ad campum vivarii, et de prato voc. *Sydenmeade* cum abutt: et "de cursu aque molendini". And also a grant in reversion "unius "virgate terra" [a yard land], in *Achangre* at the death of *Richard Actedene* his sister's husband, who had no child. He was to present a pair of gloves of one penny value to the prior and canons, to be given annually by the said *Richard;* and to quit all claim to the said lands in reversion, provided the prior and canons would engage annually to pay to the king, through the hands of his bailiffs of *Aulton*, ten shillings at four quarterly payments, "pro "omnibus serviciis, consuetudinibus, exactionibus, et demandis".

This *Jo. de Venur* was a man of property at *Oakhanger*, and lived probably at the spot now called *Chapel-farm*. The grant bears date the 17th year of the reign of *Henry* III. [*viz.* 1233].

It would be tedious to enumerate every little grant for lands or tenements that might be produced from my vouchers. I shall therefore pass over all such for the present, and conclude this letter with a remark that must strike every thinking person with some degree of wonder. No sooner had a monastic institution got a footing, but the neighbourhood began to be touched with a secret and religious awe. Every person round was desirous to promote so good a work; and either by sale, by grant, or by gift in reversion, was ambitious of appearing a benefactor. They who had not lands to spare gave roads to accommodate the infant

foundation. The religious were not backward in keeping up this pious propensity, which they observed so readily influenced the breasts of men. Thus did the more opulent monasteries add house to house, and field to field; and by degrees manor to manor: till at last "there was no place left"; but every district around became appropriated to the purposes of their founders, and every precinct was drawn into the vortex.

LETTER VIII.

Our forefathers in this village were no doubt as busy and bustling, and as important, as ourselves: yet have their names and transactions been forgotten from century to century, and have sunk into oblivion; nor has this happened only to the vulgar, but even to men remarkable and famous in their generation. I was led into this train of thinking by finding in my vouchers that Sir *Adam Gurdon* was an inhabitant of *Selborne*, and a man of the first rank and property in the parish. By Sir *Adam Gurdon* I would be understood to mean that leading and accomplished malecontent in the *Mountfort* faction, who distinguished himself by his daring conduct in the reign of *Henry* III. The first that we hear of this person in my papers is, that with two others he was bailiff of *Alton* before the sixteenth of *Henry* III. *viz.* about 1231, and then not knighted. Who *Gurdon* was, and whence he came, does not appear: yet there is reason to suspect that he was originally a mere soldier of fortune, who had raised himself by marrying women of property. The name of *Gurdon* does not seem to be known in the south; but there is a name so like it in an adjoining kingdom, and which belongs to two or three noble families, that it is probable this remarkable person was a *North Briton;* and the more so, since the Christian name of *Adam* is a distinguished one to this day among the family of the *Gordons.*— But, be this as it may, Sir *Adam Gurdon* has been noticed by all the writers of *English* history for his bold disposition and disaffected spirit, in that he not only figured during the successful rebellion of *Leicester*, but kept up the war after the defeat and death of that baron, entrenching himself in the woods of *Hampshire*, towards the town of *Farnham.* After the battle of *Evesham*, in which *Mountfort* fell, in the year 1265, *Gurdon* might not think it safe to return to his house for fear of a surprise; but cautiously fortified himself amidst the forests and woodlands with which he

was so well acquainted. Prince *Edward*, desirous of putting an end to the troubles which had so long harassed the kingdom, pursued the arch-rebel into his fastnesses; attacked his camp; leaped over the entrenchments; and, singling out *Gurdon*, ran him down, wounded him, and took him prisoner.[1]

There is not perhaps in all history a more remarkable instance of command of temper, and magnanimity, than this before us: that a young prince, in the moment of victory, when he had the fell adversary of the crown and royal family at his mercy, should be able to withhold his hand from that vengeance which the vanquished so well deserved. A cowardly disposition would have been blinded by resentment: but this gallant heir apparent saw at once a method of converting a most desperate foe into a lasting friend. He raised the fallen veteran from the ground, he pardoned him, he admitted him into his confidence, and introduced him to the queen, then lying at *Guildford*, that very evening. This unmerited and unexpected lenity melted the heart of the rugged *Gurdon* at once; he became in an instant a loyal and useful subject, trusted and employed in matters of moment by *Edward* when king, and confided in till the day of his death.

LETTER IX.

It has been hinted in a former letter that Sir *Adam Gurdon* had availed himself by marrying women of property. By my evidences it appears that he had three wives, and probably in the following order: *Constantia*, *Ameria*, and *Agnes*. The first of these ladies, who was the companion of his middle life, seems to have been a person of considerable fortune, which she inherited from *Thomas Makerel*, a gentleman of *Selborne*, who was either her father or uncle. The second, *Ameria*, calls herself the quondam wife of Sir *Adam*, "quæ fui uxor," &c. and talks of her sons under age. Now *Gurdon* had no son: and beside *Agnes* in another document says, "Ego *Agnes* quondam uxor Domini *Adæ Gurdon* in pura et "ligea viduitate mea": but *Gurdon* could not leave two widows; and therefore it seems probable that he had been divorced from *Ameria*, who afterwards married, and had sons. By *Agnes* Sir *Adam* had a daughter *Johanna*, who was his heiress, to whom

[1] M. Paris, p. 675, & Triveti Annales.

Agnes in her life-time surrendered part of her jointure:—he had also a bastard son.

Sir *Adam* seems to have inhabited the house now called *Temple*, lying about two miles east of the church, which had been the property of *Thomas Makerel*.

In the year 1262 he petitioned the prior of *Selborne* in his own name, and that of his wife *Constantia* only, for leave to build him an *oratory* in his manor-house, "in curia sua". Licenses of this sort were frequently obtained by men of fortune and rank from the bishop of the diocese, the archbishop, and sometimes, as I have seen instances, from the pope; not only for convenience-sake, and on account of distance, and the badness of the roads, but as a matter of state and distinction. Why the owner should apply to the *prior*, in preference to the *bishop* of the *diocese*, and how the former became competent to such a grant, I cannot say; but that the priors of *Selborne* did take that privilege is plain, because some years afterward, in 1280, Prior *Richard* granted to *Henry Waterford* and his wife *Nicholaa* a license to build an *oratory* in their court-house, "curia sua *de Waterford*," in which they might celebrate divine service, saving the rights of the mother church of *Basynges*. Yet all the while the prior of *Selborne* grants with such reserve and caution, as if in doubt of his power, and leaves *Gurdon* and his lady answerable in future to the bishop, or his ordinary, or to the vicar for the time being, in case they should infringe the rights of the mother church of *Selborne*.

The manor-house called *Temple* is at present a single building, running in length from south to north, and has been occupied as a common farm house from time immemorial. The south end is modern, and consists of a brew-house, and then a kitchen. The middle part is an hall twenty-seven feet in length, and nineteen feet in breadth; and has been formerly open to the top; but there is now a floor above it, and also a chimney in the western wall. The roofing consists of strong massive rafter-work ornamented with carved roses. I have often looked for the *lamb* and *flag*, the arms of the *knights templars*, without success; but in one corner found a fox with a goose on his back, so coarsely executed, that it required some attention to make out the device.

Beyond the hall to the north is a small parlour with a vast heavy stone chimney-piece; and, at the end of all, the *chapel* or *oratory*, whose massive thick walls and narrow windows at once bespeak great antiquity. This room is only sixteen feet by

sixteen feet eight inches; and full seventeen feet nine inches in height. The ceiling is formed of vast joists, placed only five or six inches apart. Modern delicacy would not much approve of such a place of worship: for it has at present much more the appearance of a dungeon than of a room fit for the reception of people of condition. For the outside I refer the reader to the plate, in which Mr. *Grimm* has represented it with his usual accuracy. The field on which this oratory abuts is still called Chapel-field. The situation of this house is very particular, for it stands upon the immediate verge of a steep abrupt hill.[1]

Not many years since this place was used for an hop-kiln, and was divided into two stories by a loft, part of which remains at present, and makes it convenient for peat and turf, with which it is stowed.

LETTER X.

The Priory at times was much obliged to *Gurdon* and his family. As *Sir Adam* began to advance in years he found his mind influenced by the prevailing opinion of the reasonableness and efficacy of prayers for the dead; and, therefore, in conjunction with his wife *Constantia*, in the year 1271, granted to the prior and convent of *Selborne* all his right and claim to a certain place, *placea*, called *La Pleystow*, in the village aforesaid, "in *liberam, puram*, et *perpetuam elemosinam*". This *Pleystow*,[2] *locus ludorum*, or play-place, is a level area near the church of about forty-four yards by thirty-six, and is known now by the name of the *Plestor*.[3]

It continues still, as it was in old times, to be the scene of recreation for the youths and children of the neighbourhood; and impresses an idea on the mind that this village, even in *Saxon* times, could not be the most abject of places, when the inhabitants thought proper to assign so spacious a spot for the sports and amusements of it's young people.[4]

[1] [This reference is to the plate in the quarto editions. I regret to say that the house as it stood in Gilbert White's time no longer exists. It has long been pulled down, giving place to as uninteresting and ugly a building as can be imagined. The old wall, however, still remains, and probably without any important change. —*Bell.*]

[2] In *Saxon* Plegeꝛcop, or Plegꝛcop; viz. *Plegestow*, or *Plegstow*.

[3] At this juncture probably the vast oak, mentioned p. 4, was planted by the prior, as an ornament to his new acquired market place. According to this supposition the oak was aged 432 years when blown down.

[4] For more circumstances respecting the *Plestor*, see Letter II. to Mr. *Pennant*.

As soon as the prior became possessed of this piece of ground, he procured a charter for a *market*[1] from king *Henry* III. and began to erect houses and stalls, "*seldas*," around it. From this period *Selborne* became a market town: but how long it enjoyed that privilege does not appear. At the same time *Gurdon* reserved to himself, and his heirs, a way through the said *Plestor* to a tenement and some crofts at the upper end, abutting on the south corner of the church-yard. This was, in old days, the manerial house of the street manor, though now a poor cottage; and is known at present by the modern name of *Elliot's*. *Sir Adam* also did, for the health of his own soul, and that of his wife *Constantia*, their predecessors and successors, grant to the prior and canons quiet possession of all the tenements and gardens, "*curtillagia*," which they had built and laid out on the lands in *Selborne*, on which he and his vassals, "*homines*," had undoubted right of common: and moreover did grant to the convent the full privilege of that right of common; and empowered the religious to build tenements and make gardens along the king's highway in the village of *Selborne*.

From circumstances put together it appears that the above were the first grants obtained by the Priory in the village of *Selborne*, after it had subsisted about thirty-nine years: moreover they explain the nature of the mixed manor still remaining in and about the village, where one field or tenement shall belong to *Magdalen-college* in the university of *Oxford*, and the next to *Norton Powlet*, esq. of *Rotherfield* house; and so down the whole street. The case was, that the whole was once the property of *Gurdon*, till he made his grants to the convent; since which some belongs to the successors of *Gurdon* in the manor, and some to the college; and this is the occasion of the strange jumble of property. It is remarkable that the tenement and crofts which Sir *Adam* reserved at the time of granting the Plestor should still remain a part of the *Gurdon-manor*, though so desirable an addition to the vicarage that is not as yet possessed of one inch of glebe at home: but of late, *viz.* in *January* 1785, *Magdalen-*

[1] Bishop *Tanner*, in his *Notitia Monastica*, has made a mistake respecting the *market* and *fair* at *Selborne:* for in his references to *Dodsworth*, cart. 54 *Hen.* III. m. 3. he says, "*De mercatu, et feria de Seleburn*". But this reference is wrong; for, instead of *Seleburn*, it proves that the place there meant was *Lekeborne*, or *Legeborne*, in the county of *Lincoln*. This error was copied from the index of the Cat. MSS. Angl. It does not appear that there ever was a *chartered* fair at *Selborne*. For several particulars respecting the present fair at *Selborne* see Letter XXVI. of these Antiquities.

college purchased that little estate, which is life-holding, in reversion, for the generous purpose of bestowing it, and it's lands, being twelve acres (three of which abut on the church-yard and vicarage-garden) as an improvement hereafter to the living, and an eligible advantage to future incumbents.

The year after *Gurdon* had bestowed the *Plestor* on the Priory, *viz.* in 1272, *Henry* III. king of *England* died, and was succeeded by his son *Edward.* This magnanimous prince continued his regard for Sir *Adam,* whom he esteemed as a brave man, and made him *warden,* "*custos,*" of the forest of Wolmer.[1] Though little emolument might hang to this appointment, yet there are reasons why it might be highly acceptable; and, in a few reigns after, it was given to princes of the blood.[2] In old days gentry

[1] Since the letters respecting *Wolmer-forest* and *Ayles-holt*, from p. 14 to 26, were printed, the author has been favoured with the following extracts :—

In the "Act of Resumption, 1 Hen. VII." it was provided, that it be not prejudicial to "*Harry* at *Lode*, ranger of our forest of *Wolmere*, to him by oure letters "patents before tyme gevyn". Rolls of Parl. Vol. VI. p. 370.

In the 11 Hen. VII. 1495—"*Warlham* [Wardleham] and the office of forest [forester] of *Wolmere*" were held by *Edmund* duke of *Suffolk.*—Rolls, ib. 474.

Act of general pardon, 14 *Hen.* VIII. 1523, not to extend to "*Rich.* Bp. of "*Wynton* [bishop *Fox*] for any seizure or forfeiture of liberties, &c. within the "forest of *Wolmer*, *Alysholt*, and *Newe Forest;* nor to any person for waste, &c. "within the manor of *Wardlam*, or parish of *Wardlam* [*Wardleham*]; nor to "abusing, &c. of any office or fee, within the said forests of *Wolmer* or *Alysholt*, "or the said park of *Wardlam.*"—County *Suth't.*

Rolls prefixt to 1st Vol. of Journals of the Lords, p. xciii. b.

To these may be added some other particulars, taken from a book lately published, entitled "An Account of all the Manors, Messuages, Lands, &c. in the "different Counties of *England* and *Wales*, held by Lease from the Crown; as "contained in the Report of the Commissioners appointed to inquire into the State "and Condition of the Royal Forests," &c.—London, 1787.

"Southampton."

£. s. d.

P. 64, "A fee-farm rent of 31 2 11 out of the manors of East and West *Wardle-*"*ham;* and also the office of *lieutenant* or *keeper* of the forest or chase of *Aliceholt* "and *Wolmer*, with all offices, fees, commodities, and privileges thereto belonging.

"Names of lessees, *William* earl of *Dartmouth* and others (in trust).

"Date of the last lease, March 23, 1780; granted for such term as would fill up "the subsisting term to 31 years.

"Expiration March 23, 1811."

"Appendix, No III."

"Southampton."

"Hundreds—*Selborne* and *Finchdeane.*"

"Honours and manors," &c.

"*Aliceholt* forest, three parks there.

"*Bensted* and *Kingsley;* a petition of the parishioners concerning the three "parks in *Aliceholt* forest."

William, first earl of *Dartmouth*, and paternal grandfather to the present lord *Stawel*, was a lessee of the forests of *Aliceholt* and *Wolmer* before brigadier-general *Emanuel Scroope Howe.*

[2] See Letter II. of these Antiquities.

resided more at home on their estates, and, having fewer resources of elegant in-door amusement, spent most of their leisure hours in the field and the pleasures of the chase. A large domain, therefore, at little more than a mile distance, and well stocked with game, must have been a very eligible acquisition, affording him influence as well as entertainment; and especially as the manerial house of *Temple*, by its exalted situation, could command a view of near two-thirds of the forest.

That *Gurdon*, who had lived some years the life of an outlaw, and at the head of an army of insurgents, was, for a considerable time, in high rebellion against his sovereign, should have been guilty of some outrages, and should have committed some depredations, is by no means matter of wonder. Accordingly we find a *distringas* against him, ordering him to restore to the bishop of *Winchester* some of the temporalities of that see, which he had taken by violence and detained; viz. some lands in *Hocheleye*, and a mill.[1] By a *breve*, or writ, from the king he is also enjoined to readmit the bishop of *Winchester*, and his tenants of the parish and town of *Farnham*, to pasture their horses, and other *larger* cattle, "*averia*" in the forest of *Wolmer*, as had been the usage from time immemorial. This writ is dated in the tenth year of the reign of *Edward*, viz. 1282.

All the king's writs directed to *Gurdon* are addressed in the following manner: "*Edwardus*, Dei gratia, &c. dilecto et fideli "suo *Ade Gurdon* salutem"; and again, "Custodi foreste sue de "*Wolvemere*".

In the year 1293 a quarrel between the crews of an *English* and a *Norman* ship, about some trifle, brought on by degrees such serious consequences, that in 1295 a war broke out between the two nations. The *French* king, *Philip the Hardy*, gained some advantages in *Gascony*; and, not content with those, threatened *England* with an invasion, and, by a sudden attempt, took and burnt *Dover*.

Upon this emergency *Edward* sent a writ to *Gurdon*, ordering him and four others to enlist three thousand soldiers in the counties of *Surrey*, *Dorset*, and *Wiltshire*, able-bodied men, "tam sagittare quam balistare potentes": and to see that they were marched, by the feast of *All Saints*, to *Winchelsea*, there to be embarked aboard the king's transports.

[1] *Hocheleye*, now spelt *Hawkley*, is in the hundred of *Selborne*, and has a mill at this day.

The occasion of this armament appears also from a summons to the bishop of *Winchester* to parliament, part of which I shall transcribe on account of the insolent menace which is said therein to have been denounced against the *English* language :—"qualiter "rex *Franciæ* de terra nostra *Gascon* nos fraudulenter et cautelose "decepit, eam nobis nequiter detinendo . . . vero predictis fraude "et nequitia non contentus, ad expurgationem regni nostri classe "maxima et bellatorum copiosa multitudine congregatis, cum quibus "regnum nostrum et regni ejusdem incolas hostiliter jam invasurus, "*linguam Anglicam*, si concepte iniquitatis proposito detestabili "potestas correspondeat, quod Deus avertat, *omnino de terra delere* "*proponit*". Dated 30th September, in the year of king *Edward*'s reign xxiii.[1]

The above are the last traces that I can discover of *Gurdon*'s appearing and acting in public. The first notice that my evidences give of him is, that, in 1232, being the 16th of *Henry* III. he was the king's bailiff, with others, for the town of *Alton*. Now, from 1232 to 1295 is a space of sixty-three years; a long period for one man to be employed in active life! Should any one doubt whether all these particulars can relate to one and the same person, I should wish him to attend to the following reasons why they might. In the first place, the documents from the priory mention but one Sir *Adam Gurdon*, who had no son lawfully begotten: and in the next, we are to recollect that he must have probably been a man of uncommon vigour both of mind and body; since no one, unsupported by such accomplishments, could have engaged in such adventures, or could have borne up against the difficulties which he sometimes must have encountered: and, moreover, we have modern instances of persons that have maintained their abilities for near that period.

Were we to suppose *Gurdon* to be only twenty years of age in 1232, in 1295 he would be eighty-three; after which advanced period it could not be expected that he should live long. From the silence, therefore, of my evidences it seems probable that this extraordinary person finished his life in peace, not long after, at his mansion of *Temple*. *Gurdon*'s seal had for it's device—a man, with a helmet on his head, drawing a cross-bow; the legend, "*Sigillum Ade de Gurdon*"; his arms were, "Goulis, iii "floures argent issant de testes de leopards".[2]

[1] Reg. *Wynton*, *Stratford*, but query *Stratford*; for *Stratford* was not bishop of *Winton* till 1323, near thirty years afterwards.

[2] From the collection of *Thomas Martin*, Esq. in the Antiquarian Repertory, p. 109, N° XXXI.

If the stout and unsubmitting spirit of *Gurdon* could be so much influenced by the belief and superstition of the times, much more might the hearts of his ladies and daughter. And accordingly we find that *Ameria*, by the consent and advice of her sons, though said to be all under age, makes a grant for ever of some lands down by the stream at *Durton*; and also of her right of the common of *Durton* itself.[1] *Johanna*, the daughter and heiress of Sir *Adam*, was married, I find, to *Richard Achard*; she also grants to the prior and convent lands and tenements in the village of *Selborne*, which her father obtained from *Thomas Makerel*; and also all her goods and chattels in *Selborne* for the consideration of two hundred pounds sterling. This last business was transacted in the first year of *Edward* II. viz. 1307. It has been observed before that *Gurdon* had a natural son: this person was called by the name of *John Dastard*, alias *Wastard*, but more probably *Bastard*; since bastardy in those days was not esteemed any disgrace, though dastardy was deemed the greatest. He was married to *Gunnorie Duncun*; and had a tenement and some land granted him in *Selborne* by his sister *Johanna*.

LETTER XI.

THE *Knights Templars*,[2] who have been mentioned in a former letter, had considerable property in *Selborne*; and also a *precep-*

[1] *Durton*, now called *Dorton*, is still a common for the copyholders of *Selborne* manor.

[2] *The* MILITARY ORDERS *of the* RELIGIOUS.

The *Knights Hospitalars* of *St. John of Jerusalem*, afterwards called *Knights of Rhodes*, now of *Malta*, came into *England* about the year 1100. 1 *Hen.* I.

The *Knights Templars* came into *England* pretty early in *Stephen's* reign, which commenced 1135. The order was dissolved in 1312, and their estates given by act of Parliament to the *Hospitalars*, in 1323 (all in *Edw.* II.) though many of their estates were never actually enjoyed by the said *Hospitalars*.

Vid. Tanner, p. xxiv. x.

The *commandries* of the *Hospitalars*, and *preceptories* of *Templars*, were each subordinate to the principal house of their respective religion in *London*. Although these are the different denominations, which *Tanner* at p. xxviii. assigns to the cells of these different orders, yet throughout the work very frequent instances occur of *preceptories* attributed to the *Hospitalars*; and if in some passages of *Notitia Monast. commandries* are attributed to the *Templars*, it is only where the place afterwards became the property of the *Hospitalars*, and so is there indifferently styled *preceptory* or *commandry*; see p. 243, 263, 276, 577, 678. But, to account for the first observed inaccuracy, it is probable the *preceptories* of the *Templars*, when given to the *Hospitalars*, were still vulgarly, however, called by their old

tory at *Sudington*, now called *Southington*, a hamlet lying one mile to the east of the village. Bishop *Tanner* mentions only two such houses of the *Templars* in all the county of *Southampton*, viz. *Godesfield*, founded by *Henry de Blois*, bishop of *Winchester*, and *South Badeisley*, a preceptory of the *Knights Templars*, and afterwards of *St. John of Jerusalem*, valued at one hundred and eighteen pounds sixteen shillings and seven pence *per annum*. Here then was a *preceptory* unnoticed by antiquaries, between the village and *Temple*. Whatever the edifice of the *preceptory* might have been, it has long since been dilapidated; and the whole hamlet contains now only one mean farm-house, though there were two in the memory of man.

It has been usual for the religious of different orders to fall into great dissensions, and especially when they were near neighbours. Instances of this sort we have heard of between the monks of *Canterbury*; and again between the old abbey of St. *Swythun*, and the comparatively new minister of *Hyde* in the city of *Winchester*.[1] These feuds arose probably from different orders

name of *preceptories*; whereas in propriety the societies of the *Hospitalars* were indeed (as has been said) *commandries*. And such deviation from the strictness of expression in this case might occasion those societies of *Hospitalars* also to be indifferently called *preceptories*, which had originally been vested in *them*, having never belonged to the *Templars* at all.—See in *Archer*, p. 609. *Tanner*, p. 300. col. 1. 720. note *e*.

It is observable that the very statute for the dissolution of the *Hospitalars* holds the same language; for there, in the enumeration of particulars, occur "*commandries, preceptories*". *Codex*, p. 1190. Now this intercommunity of names, and that in an act of parliament too, made some of our ablest antiquaries look upon a *preceptory* and *commandry* as strictly synonymous; accordingly we find *Camden*, in his *Britannia*, explaining *præceptoria* in the text by a *commandry* in the margin, p. 356, 510. J. L.

Commandry, a manor or chief messuage with lands, &c. belonging to the priory of St. *John of Jerusalem*; and he who had the government of such house was called the *commander*, who could not dispose of it but to the use of the priory, only taking thence his own sustenance, according to his degree, who was usually a brother of the same priory. *Cowell.* He adds (confounding these with *preceptories*) they are in many places termed *Temples*, as *Temple Bruere* in *Lincolnshire*, &c. *Preceptories* were possessed by the more eminent sort of *Templars*, whom the chief master created and called *Præceptores Templi*. *Cowell*, who refers to *Stephens* de Jurisd. lib. 4. c. 10. num. 27.

Placita de juratis et assis coram Salom. de Roff et sociis suis justic. Itiner. apud Wynton. &c. anno regni R. Edwardi fil. Reg. Hen. octavo.—"et Magr. "Milicie Templi in Angl. ht emendassē panis, & suis [cerevisiæ] in *Sodington*, & "nescint q°. war. et—et magist. Milicie Templi nōn vēn iō distr."

Chapter-house Westminster.

[1] *Notitia Monastica, p.* 155.

"*Winchester, Newminster.* King *Alfred* founded here first only a house and "chapel for the learned monk *Grimbald*, whom he had brought out of *Flanders*:

being crowded within the narrow limits of a city, or garrison-town, where every inch of ground was precious, and an object of contention. But with us, as far as my evidences extend, and while *Robert Saunford* was *master*,[1] and *Richard Carpenter* was *preceptor*, the *Templars* and the *Priors* lived in an intercourse of mutual good offices.

My papers mention three transactions, the exact time of which cannot be ascertained, because they fell out before dates were usually inserted; though probably they happened about the middle of the thirteenth century; not long after *Saunford* became *master*. The first of these is that the *Templars* shall pay to the priory of *Selborne*, annually, the sum of ten shillings at two half yearly payments from their chamber, "*camera*," at *Sudington*, "per manum *preceptoris*, vel *ballivi* nostri, qui pro tempore fuerit "ibidem," till they can provide the *prior* and canons with an equivalent in lands or rents within four or five miles of the said convent. It is also further agreed that, if the *Templars* shall be in arrears for one year, that then the *prior* shall be empowered to distrain upon their live stock in *Bradeseth*. The next matter was a grant from *Robert de Saunford* to the *priory* for ever, of a good and sufficient road, "*cheminum*," capable of admitting carriages, and proper for the drift of their larger cattle, from the way which extends from *Sudington* towards *Blakemere*, on to the lands which the convent possesses in *Bradeseth*.

The third transaction (though for want of dates we cannot say which happened first and which last) was a grant from *Robert*

"but afterwards projected, and by his will ordered, a noble church or religious "house to be built in the cemetery on the north side of the old minster or cathedral; "and designed that *Grimbald* should preside over it. This was begun A.D. 901, "and finished to the honour of the *Holy Trinity*, *Virgin Mary*, and *St. Peter*, by "his son king *Edward*, who placed therein secular canons: but A.D. 963 they "were expelled, and an abbot and monks put in possession by bishop *Ethelwold*.

"Now the churches and habitations of these two societies being so very near "together, the differences which were occasioned by their singing, bells, and other "matters, arose to so great a height, that the religious of the new monastery thought "fit, about A.D. 1119, to remove to a better and more quiet situation without the "walls, on the north part of the city called HYDE, where king *Henry* I. at the "instance of *Will. Gifford*, bishop of *Winton*, founded a stately abbey for them. "St. *Peter* was generally accounted patron; though it is sometimes called the "monastery of St. *Grimbald*, and sometimes of St. *Barnabas*," &c.

Note. A few years since a county bridewell, or house of correction, has been built on the immediate site of *Hide Abbey*. In digging up the old foundations the workmen found the head of a crosier in good preservation.

[1] *Robert Saunforde* was *master* of the *Temple* in 1241; *Guido de Foresta* was the next in 1292. The former is fifth in a list of the *masters* in a MS. *Bib. Cotton. Nero.* E. VI.

Samford to the priory of a tenement and its appurtenances in the village of *Selborne*, given to the *Templars* by *Americus de Vasci*.[1] This property, by the manner of describing it,—"totum tene-"mentum cum omnibus pertinentiis suis, scilicet in terris, & "*hominibus*, in pratis & pascuis, & nemoribus," &c. seems to have been no inconsiderable purchase, and was sold for two hundred marks sterling, to be applied for the buying of more land for the support of the holy war.

Prior *John* is mentioned as the person to whom *Vasci*'s land is conveyed. But in *Willis*'s list there is no prior *John* till 1339, several years after the dissolution of the order of the *Templars* in 1312; so that unless *Willis* is wrong, and has omitted a prior *John* since 1262 (that being the date of his first prior) these transactions must have fallen out before that date.

I find not the least traces of any concerns between *Gurdon* and the *Knights Templars;* but probably after his death his daughter *Johanna* might have, and might bestow, *Temple* on that order in support of the holy land: and, moreover, she seems to have been moving from *Selborne* when she sold her goods and chattels to the priory, as mentioned above.

Temple no doubt did belong to the knights, as may be asserted, not only from it's name, but also from another corroborating circumstance of it's being still a manor *tithe-free;* "for, by virtue "of their order," says Dr. *Blackstone*, "the lands of the *Knights* "*Templars* were privileged by the pope with a discharge from "tithes."

Antiquaries have been much puzzled about the terms *preceptores* and *preceptorium*, not being able to determine what officer or edifice was meant. But perhaps all the while the passage quoted above from one of my papers "per manum *preceptoris* vel *ballivi* "nostri, qui pro tempore fuerit ibidem," may help to explain the difficulty. For if it be allowed here that *preceptor* and *ballivus* are synonymous words, then the brother who took on him that office resided in the house of the *Templars* at *Sudington*, a *preceptory;* where he was there *preceptor*, superintended their affairs, received their money; and, as in the instance there mentioned, paid from their chamber, "*camera*," as directed: so that, according to this explanation, a *preceptor* was no other than a steward, and a *preceptorium* was his residence. I am well aware

[1] *Americus Vasci*, by his name, must have been an *Italian*, and had been probably a soldier of fortune, and one of *Gurdon*'s captains. *Americus Vespucio*, the person who gave name to the new world was a *Florentine*.

that, according to strict Latin, the *vel* should have been *seu* or *sive*, and the order of the words "*preceptoris nostri*, vel ballivi, "qui"—et "*ibidem*" should have been *ibi; ibidem* necessarily having reference to *two* or more persons: but it will hardly be thought fair to apply the niceties of classic rules to the Latinity of the thirteenth century, the writers of which seem to have aimed at nothing farther than to render themselves intelligible.

There is another remark that we have made, which, I think, corroborates what has been advanced; and that is, that *Richard Carpenter, preceptor* of *Sudington*, at the time of the transactions between the *Templars* and *Selborne* Priory, did always sign *last* as a witness in the three deeds: he calls himself *frater*, it is true, among many other brothers, but subscribes with a kind of deference, as if, for the time being, his *office* rendered him an inferior in the community.[1]

LETTER XII.

The ladies and daughter of Sir *Adam Gurdon* were not the only benefactresses to the Priory of *Selborne;* for, in the year 1281, *Ela Longspee* obtained masses to be performed for her soul's health; and the prior entered into an engagement that one of the convent should every day say a special mass for ever for the said benefactress, whether living or dead. She also engaged within five years to pay to the said convent one hundred marks of silver for the support of a *chantry* and *chantry-chaplain*, who should perform his masses daily in the parish church of *Selborne*.[2]

[1] In two or three ancient records relating to St. *Oswald's* hospital in the city of *Worcester*, printed by Dr. *Nash*, p. 227 and 228, of his collections for the history of *Worcestershire*, the words *preceptorium* and *preceptoria* signify the *mastership* of the said hospital: "ad *preceptorium* sive *magisterium* presentavit—*preceptorii* sive "*magisterii* patronus. Vacavit dicta *preceptoria* seu *magisterium*—ad *preceptoriam* "et regimen dicti hospitalis—Te *preceptorem* sive magistrum prefecimus."

Where *preceptorium* denotes a building or apartment it may probably mean the master's lodgings, or at least the *preceptor*'s apartment, whatsoever may have been the office or employment of the said preceptor.

A *preceptor* is mentioned in *Thoresby's Ducatus Leodinensis*, or History of *Leeds*, p. 225, and a deed witnessed by the *preceptor* and chaplain before dates were inserted.—*Du Fresne*'s Supplement: "*Preceptoriæ*, prædia *preceptoribus* assig- "nata".—*Cowell*, in his Law Dictionary, enumerates sixteen *preceptoriæ*, or *preceptories*, in *England;* but *Sudington* is not among them.—It is remarkable that *Gurtlerus*, in his *Historia Templariorum* Amstel. 1691, never once mentions the words *preceptor* or *preceptorium*.

[2] A *chantry* was a chapel joined to some cathedral or parish church, and endowed with annual revenues for the maintenance of one or more priests to sing mass daily for the soul of the founder, and others.

In the east end of the south aile there are two sharp-pointed gothic niches; one of these probably was the place under which these masses were performed; and there is the more reason to suppose as much, because, till within these thirty years, this space was fenced off with *gothic* wooden railing, and was known by the name of the south chancel.[1]

The solicitude expressed by the donor plainly shews her piety and firm persuasion of the efficacy of prayers for the dead; for she seems to have made every provision for the payment of the sum stipulated within the appointed time; and to have felt much anxiety lest her death, or the neglect of her executors or assigns, might frustrate her intentions.—"Et si contingat me in solucione "predicte pecunie annis predictis in parte aut in toto deficere, "quod absit; concedo et obligo pro me et assignatis meis, quod "*Vice-Comes* - - - *Oxon* et - - - - - qui pro tempore fuerint, per "omnes terras et tenementa, et omnia bona mea mobilia et im- "mobilia ubicunque in balliva sua fuerint inventa ad solucionem "predictam faciendam possent nos compellere." And again— "Et si contingat dictos religiosos labores seu expensas facere "circa predictam pecuniam, seu circa partem dicte pecunie; volo "quod dictorum religiosorum impense et labores levantur ita quod "predicto priori vel uni canonicorum suorum superhiis simplici "verbo credatur sine alterius honore probacionis; et quod utrique "predictorum virorum in unam marcam argenti pro cujuslibet "distrincione super me facienda tenear.—Dat. apud *Wareborn* "*die sabati* proxima ante festum *St. Marci* evangeliste, anno regni "regis *Edwardi* tertio decimo."[2]

But the reader perhaps would wish to be better informed respecting this benefactress, of whom as yet he has heard no particulars.

The *Ela Longspee* therefore above-mentioned was a lady of high birth and rank, and became countess to *Thomas de Newburgh*, the sixth earl of *Warwick*: she was the second daughter of the famous *Ela Longspee*, countess of *Salisbury*, by *William Longspee*, natural son of King *Henry* II. by *Rosamond*.

[1] For what is said more respecting this chantry see Letter III. of these Antiquities.—Mention is made of a *Nicholas Langrish*, capellanus de *Selborne*, in the time of *Henry* VIII. Was he chantry-chaplain to *Ela Longspee*, whose masses were probably continued to the time of the reformation? More will be said of this person hereafter.

[2] Ancient deeds are often dated on a *Sunday*, having been executed in churches and church-yards for the sake of notoriety, and for the conveniency of procuring several witnesses to attest.

Our lady, following the steps of her illustrious mother,[1] "was "a great benefactress to the university of *Oxford*, to the canons "of *Oseney*, the nuns of *Godstow*, and other religious houses in "*Oxfordshire*. She died very aged in the year 1300,[2] and was "buried before the high altar in the abbey church of *Oseney*, at "the head of the tomb of *Henry D'Oily*, under a flat marble, "on which was inlaid her portraiture, in the habit of a vowess, "engraved on a copper-plate."—*Edmonson's History and Genealogical Account of the Grevilles*, p. 23.

LETTER XIII.

THE reader is here presented with five forms respecting the choosing of a prior; but as they are of some length they must be reserved for the Appendix; their titles are N°. 108. "Charta "petens licentiam elegendi *prelatum* a Domino episcopo *Win-* "*toniensi*:"—"Forma licentie concesse:"—"Forma decreti "post electionem conficiendi:"—108. "Modus procedendi ad "electionem per formam scrutinii:"—et "Forma ricte presen- "tandi electum." Such evidences are rare and curious, and throw great light upon the general *monastico-ecclesiastical* history of this kingdom, not yet sufficiently understood.

In the year 1324 there was an election for a prior at *Selborne*; when some difficulties occurring, and a devolution taking place, application was made to *Stratford*, who was bishop of *Winchester* at that time, and of course the visitor and patron of the convent at the spot above-mentioned.[3]

An extract from REG. STRATFORD. *Winton.*

P. 4. "Commissio facta sub-priori de *Selebourne*" by the bishop enjoining him to preserve the discipline of the order in the convent during the vacancy made by the late death of the prior, ("nuper pastoris solatio destituta,") dated 4^to^. kal. Maii. ann. 2^do^ sc. of his consecration. [sc. 1324.]

[1] *Ela Longspee*, countess of *Salisbury*, in 1232 founded a monastery at *Lacock*, in the county of *Wilts*, and also another at *Hendon*, in the county of *Somerset*, in her widowhood, to the honour of the Blessed Virgin and St. *Bernard*. CAMDEN.

[2] Thus she survived the foundation of her chantry at *Selborne* fifteen years. About this lady and her mother consult *Dugdale*'s Baronage, I. 72, 175, 177.—*Dugdale*'s Warwickshire, I. 383,—*Leland*'s Itin. II. 45.

[3] *Stratford* was bishop of *Winchester* from 1323 to 1333, when he was translated to *Canterbury*.

P. 6. "Custodia Prioratus de *Seleburne* vacantis," committed by the bishop to *Nicholas de la - - -*, a layman, it belonging to the bishop "ratione vacationis ejusdem," in *July* 1324, ibid. "negotium electionis de *Selebourne.* Acta coram *Johanne* Episcopo, "&c. 1324 in negotio electionis de fratre *Waltero de Insula* canonico prioratus de *Selebourne,*" lately elected by the sub-prior and convent, by way of scrutiny: that it appeared to the bishop, by certificate from the dean of *Alton,* that solemn citation and proclamation had been made in the church of the convent where the election was held, that any who opposed the said election or elected should appear.—Some difficulties were started, which the bishop over-ruled, and confirmed the election, and admitted the new prior *sub hac forma:*—

"In Dei nomine Amen. Ego *Johannes* permissione divina, &c. "te *Walterum de Insula* ecclesie *de Selebourne* nostre dioceseos nostrique patronatus vacantis, canonicum et cantorem, virum utique "providum, et discretum, literarum scientia preditum, vita moribus "et conversatione merito commendatum, in ordine sacerdotali et "etate legitima constitutum, de legitimo matrimonio procreatum, "in ordine et religione *Sancti Augustini de Selebourne* expresse professum, in spiritualibus et temporalibus circumspectum, *jure* nobis "hac vice *devoluto* in hac parte, in dicte ecclesie de *Selebourne* "perfectum priorem; curam et administrationem ejusdem tibi "in spiritualibus et temporalibus committentes. Dat. apud *Sele*"*bourne* XIII kalend. Augusti anno supradicto."

There follows an order to the sub-prior and convent pro obedientia:

A mandate to *Nicholas* above-named to release the Priory to the new prior:

A mandate for the induction of the new prior.

LETTER XIV.

"In the year 1373 *Wykeham,* bishop of *Winchester,* held a visitation "of his whole diocese; not only of the secular clergy through the "several deaneries, but also of the monasteries, and religious "houses of all sorts, which he visited in person. The next year "he sent his commissioners with power to correct and reform the "several irregularities and abuses which he had discovered in the "course of his visitation.

"Some years afterwards, the bishop having visited *three several*

"*times* all the religious houses throughout his diocese, and being "well informed of the state and condition of each, and of the "particular abuses which required correction and reformation, "besides the orders which he had already given, and the remedies "which he had occasionally applied by his commissioners, now "issued his injunctions to each of them. They were accommodated "to their several exigencies, and intended to correct the abuses "introduced, and to recall them all to a strict observation of the "rules of their respective orders. Many of these injunctions are "still extant, and are evident monuments of the care and attention "with which he discharged this part of his episcopal duty."[1]

Some of these injunctions I shall here produce; and they are such as will not fail, I think, to give satisfaction to the antiquary, both as never having been published before, and as they are a curious picture of monastic irregularities at that time.

The documents that I allude to are contained in the *Notabilis Visitatio de Seleburne,* held at the Priory of that place, by *Wykeham* in person, in the year 1387.

This evidence, in the original, is written on two skins of parchment; the one large, and the other smaller, and consists of a *preamble, 36 items,* and a *conclusion,* which altogether evince the patient investigation of the visitor, for which he had always been so remarkable in all matters of moment, and how much he had at heart the regularity of those institutions, of whose efficacy in their prayers for the dead he was so firmly persuaded. As the bishop was so much in earnest, we may be assured that he had nothing in view but to correct and reform what he found amiss; and was under no bias to blacken, or misrepresent, as the commissioners of *Thomas* Lord *Cromwell* seem in part to have done at the time of the reformation.[2] We may therefore with reason suppose that the bishop gives us an exact delineation of the morals and manners of the canons of *Selborne* at that juncture; and that what he found they had omitted he enjoins them; and for what they have done amiss, and contrary to their rules and statutes, he reproves them; and threatens them with punishment suitable to their irregularities.

This *visitatio* is of considerable length, and cannot be introduced into the body of this work; we shall therefore refer the reader to the *Appendix,* where he will find every particular, while we shall

[1] See *Lowth*'s Life of *Wykeham.*

[2] Letters of this sort from Dr. *Layton* to *Thomas* Lord *Cromwell* are still extant.

take some notice, and make some remarks, on the most singular *items* as they occur.

In the preamble the visitor says—"Considering the charge "lying upon us, that your blood may not be required at our "hands, we came down to visit your Priory, as our office required: "and every time we repeated our visitation we found something "still not only contrary to regular rules but also repugnant to "religion and good reputation."

In the first article after the preamble—"he commands them "on their obedience, and on pain of the greater excommunication, "to see that the canonical hours by night and by day be sung in "their choir, and the masses of the Blessed *Mary*, and other ac- "customed masses, be celebrated at the proper hours with devotion, "and at moderate pauses; and that it be not allowed to any to "absent themselves from the hours and masses, or to withdraw "before they are finished."

Item 2d. He enjoins them to observe that silence to which they are so strictly bound by the rule of Saint *Augustine* at stated times, and wholly to abstain from frivolous conversation.

Item 4th. "Not to permit such frequent passing of secular "people of both sexes through their convent, as if a thoroughfare, "from whence many disorders may and have arisen."

Item 5th. "To take care that the doors of their church and "Priory be so attended to that no suspected and disorderly "females, 'suspectæ et aliæ inhonestæ,' pass through their choir "and cloister in the dark;" and to see that the doors of their church between the nave and the choir, and the gates of their cloister opening into the fields, be constantly kept shut until their first choir-service is over in the morning, at dinner time, and when they meet at their evening collation.[1]

Item 6th mentions that several of the canons are found to be very ignorant and illiterate, and enjoins the prior to see that they be better instructed by a proper master.

Item 8th. The canons are here accused of refusing to accept of their statutable clothing year by year, and of demanding a certain specified sum of money, as if it were their annual rent and due. This the bishop forbids, and orders that the canons shall be clothed out of the revenue of the Priory, and the old garments be laid by in a chamber and given to the poor, according to the rule of Saint *Augustine*.

[1] A collation was a meal or repast on a fast day in lieu of a supper.

In *Item* 9th is a complaint that some of the canons are given to wander out of the precincts of the convent without leave; and that others ride to their manors and farms, under pretence of inspecting the concerns of the society, when they please, and stay as long as they please. But they are enjoined never to stir either about their own private concerns or the business of the convent without leave from the prior: and no canon is to go alone, but to have a grave brother to accompany him.

The injunction in *Item* 10th, at this distance of time, appears rather ludicrous; but the visitor seems to be very serious on the occasion, and says that it has been evidently proved to him that some of the canons, living dissolutely after the flesh, and not after the spirit, sleep naked in their beds without their breeches and shirts, "absque femoralibus et camisiis".[1] He enjoins that these culprits shall be punished by severe fasting, especially if they shall be found to be faulty a third time; and threatens the prior and sub-prior with suspension if they do not correct this enormity.

In *Item* 11th the good bishop is very wroth with some of the canons, whom he finds to be professed hunters and sportsmen, keeping hounds, and publicly attending hunting-matches. These pursuits, he says, occasion much dissipation, danger to the soul and body, and frequent expense; he, therefore, wishing to extirpate this vice wholly from the convent, "*radicibus extirpare*," does absolutely enjoin the canons never intentionally to be present at any public noisy tumultuous huntings; or to keep any hounds, by themselves or by others, openly or by stealth, within the convent, or without.[2]

In *Item* 12th he forbids the canons in office to make their business a plea for not attending the service of the choir; since by these means either divine worship is neglected or their brother-canons are over-burdened.

By *Item* 14th we are informed that the original number of canons at the Priory of *Selborne* was *fourteen;* but that at this visitation they were found to be let down to *eleven.* The visitor

[1] The rule alluded to in *Item* 10th, of not sleeping naked, was enjoined the *Knights Templars*, who also were subject to the rules of St. *Augustine.*
See *Gurtleri Hist. Templariorum.*

[2] Considering the strong propensity in human nature towards the pleasures of the chase, it is not to be wondered that the canons of *Selborne* should languish after hunting, when, from their situation so near the precincts of *Wolmer-forest*, the king's hounds must have been often in hearing, and sometimes in sight from their windows. - - - If the bishop was so offended at these sporting canons, what would he have said to our modern fox-hunting divines?

therefore strongly and earnestly enjoins them that, with all due speed and diligence, they should proceed to the election of proper persons to fill up the vacancies, under pain of the greater excommunication.

In *Item* 17th the prior and canons are accused of suffering, through neglect, notorious dilapidations to take place among their manerial houses and tenements, and in the walls and enclosures of the convent itself, to the shame and scandal of the institution; they are therefore enjoined, under pain of suspension, to repair all defects within the space of six months.

Item 18th charges them with grievously burthening the said Priory by means of sales, and grants of *liveries*[1] and *corrodies*.[2]

The bishop, in *Item* 19th, accuses the canons of neglect and omission with respect to their perpetual *chantry-services*.

Item 20th. The visitor here conjures the prior and canons not to withhold their original *alms*, "*eleemosynas*"; nor those that they were enjoined to distribute for the good of the souls of founders and benefactors: he also strictly orders that the fragments and broken victuals, both from the hall of their prior and their common refectory, should be carefully collected together by their *eleemosynarius*, and given to the poor without any diminution; the officer to be suspended for neglect or omission.

Item 23d. He bids them distribute their *pittances*, "*pitancias*,"[3] regularly on obits, anniversaries, festivals, &c.

Item 25th. All and every one of the canons are hereby inhibited from standing godfather to *any boy* for the future, "ne "*compatres alicujus pueri* de cetero fieri presumatis," unless by express license from the bishop obtained; because from such relationship favour and affection, nepotism, and undue influence, arise, to the injury and detriment of religious institutions.[4]

[1] "*Liberationes*, or *liberaturæ*, allowances of corn, &c. to servants *delivered* at "certain times, and in certain quantities, as *clothes*, were among the allowances "from religious houses to their dependants. See the *corrodies* granted by *Croyland* "*abbey*." *Hist. of Croyland*, Appendix, N° XXXIV.

"It is not improbable that the word in after-ages came to be confined to the "uniform of the retainers or servants of the great, who were hence called *livery* "*servants*." *Sir John Cullum's Hist. of Hawsted.*

[2] A *corrody* is an allowance to a servant living in an abbey or priory.

[3] "*Pitancia*, an allowance of bread and beer, or other provision to any pious "use, especially to the religious in a monastery, &c. for augmentation of their "commons." *Gloss. to Kennet's Par. Antiq.*

[4] "The relationship between sponsors and their god-children, who were called "*spiritual sons* and *daughters*, was formerly esteemed much more sacred than at "present. The presents at christenings were sometimes very considerable: the "connection lasted through life, and was closed with a legacy. This last mark of

Item 26th. The visitor herein severely reprimands the canons for appearing publicly in what would be called in the universities an *unstatutable manner*, and for wearing of boots, "caligæ de "*Burneto*, et *sotularium*———in ocrearum loco, ad modum "sotularium".[1]

It is remarkable that the bishop expresses more warmth against this than any other irregularity; and strictly enjoins them, under pain of ecclesiastical censures, and even imprisonment if necessary (a threat not made use of before), for the future to wear boots, "ocreis seu botis," according to the regular usage of their ancient order.

Item 29th. He here again, but with less earnestness, forbids them foppish ornaments, and the affectation of appearing like beaux with garments edged with costly furs, with fringed gloves, and silken girdles trimmed with gold and silver. It is remarkable that no punishment is annexed to this injunction.

Item 31st. He here singly and severally forbids each canon not admitted to a cure of souls to administer extreme unction, or the sacrament, to clergy or laity; or to perform the service of matrimony, till he has taken out the license of the parish priest.

Item 32d. The bishop says in this *item* that he had observed and found, in his several visitations, that the sacramental plate and cloths of the altar, surplices, &c. were sometimes left in such an uncleanly and disgusting condition as to make the beholders shudder with horror;—"quod aliquibus sunt horrori;"[2] he there-

"attention seems to have been thought almost indispensable: for, in a will, from "whence no extracts have been given, the testator left every one of his god-children "a bushel of barley." *Sir John Cullum's Hist. of Hawsted.*

"D. *Margaretæ* filiæ Regis primogenitæ, quam *filiolam*, quia ejus in baptismo "*compater* fuit, appellat, cyphum aureum et quadraginta libras, legavit."—Archbishop *Parker* de Antiquitate Eccles. Brit. speaking of Archbishop *Morton*.

[1] *Du Fresne* is copious on *caligæ* of several sorts. "Hoc item de Clericis, "presertim beneficiatis: *caligis* scacatis (chequered) rubeis, et viridibus publice "utentibus dicimus esse censendum." *Statut. Eccles. Tutel.* The chequered boots seem to be the highland plaid stockings.—"*Burnetum*, i. e. *Brunetum*, "pannus non ex lanâ nativi coloris confectus."—"*Sotularium*, i. e. subtalaris, quia "sub talo est. Peculium genus, quibus maxime Monachi nocte utebantur in "æstate: in hyeme vero Soccis."

This writer gives many quotations concerning *Sotularia*, which were not to be made too shapely; nor were the *caligæ* to be laced on too nicely.

[2] "Men abhorred the offering of the Lord." 1 *Sam. chap.* ii. *v.* 17. Strange as this account may appear to modern delicacy, the author, when first in orders, twice met with similar circumstances attending the sacrament at two churches belonging to two obscure villages. In the first he found the inside of the chalice covered with birds' dung; and in the other the communion-cloth soiled with cabbage and the greasy drippings of a gammon of bacon. The good dame at the

fore enjoins them for the future to see that the plate, cloths, and vestments, be kept bright, clean, and in decent order: and, what must surprise the reader, adds—that he expects for the future that the sacrist should provide for the sacrament good wine, pure and unadulterated; and not, as had often been the practice, that which was sour, and tending to decay:—he says farther, that it seems quite preposterous to omit in sacred matters that attention to decent cleanliness, the neglect of which would disgrace a common convivial meeting.[1]

Item 33d says that, though the relics of saints, the plate, holy vestments, and books of religious houses, are forbidden by canonical institutes to be pledged or lent out upon pawn; yet, as the visitor finds this to be the case in his several visitations, he therefore strictly enjoins the prior forthwith to recall those pledges, and to restore them to the convent; and orders that all the papers and title deeds thereto belonging should be safely deposited, and kept under three locks and keys.

In the course of the *Visitatio Notabilis* the *constitutions* of *Legate Ottobonus* are frequently referred to. *Ottobonus* was afterwards *Pope Adrian* V. and died in 1276. His constitutions are in *Lyndewood's Provinciale,* and were drawn up in the 52d of *Henry* III.

In the *Visitatio Notabilis* the usual punishment is fasting on bread and beer; and in cases of repeated delinquency on bread and water. On these occasions *quarta feria* et *sexta feria,* are mentioned often, and are to be understood of the days of the *week* numerically on which such punishment is to be inflicted.

LETTER XV.

Though bishop *Wykeham* appears somewhat stern and rigid in his visitatorial character towards the Priory of *Selborne,* yet he was on the whole a liberal friend and benefactor to that convent, which, like every other society or individual that fell in his way, partook of the generosity and benevolence of that munificent prelate.

great farm-house, who was to furnish the cloth, being a notable woman, thought it best to save her clean linen, and so sent a foul cloth that had covered her own table for two or three *Sundays* before.

[1] "—— —— —— ne turpe toral, ne sordida mappa
"Corruget nares; ne non et cantharus, et lanx
"Ostendat tibi te —— —— ——"

"In the year 1377 *William* of *Wykeham*, out of his mere good "will and liberality, discharged the whole debts of the prior and "convent of *Selborne*, to the amount of one hundred and ten "marks eleven shillings and sixpence;[1] and, a few years before "he died, he made a free gift of one hundred marks to the same "Priory: on which account the prior and convent voluntarily "engaged for the celebration of two masses a day by two canons "of the convent for ten years, for the bishop's welfare, if he "should live so long; and for his soul if he should die before the "expiration of this term."[2]

At this distance of time it seems matter of great wonder to us how these societies, so nobly endowed, and whose members were exempt by their very institution from every means of personal and family expense, could possibly run in debt without squandering their revenues in a manner incompatible with their function.

Religious houses might sometimes be distressed in their revenues by fires among their buildings, or large dilapidations from storms, &c.; but no such accident appears to have befallen the Priory at *Selborne*. Those situate on public roads, or in great towns, where there were shrines of saints, were liable to be intruded on by travellers, devotees, and pilgrims; and were subject to the importunity of the poor, who swarmed at their gates to partake of doles and broken victuals. Of these disadvantages some convents used to complain, and especially those at *Canterbury*; but this Priory, from it's sequestered situation, could seldom be subject to either of these inconveniences, and therefore we must attribute it's frequent debts and embarrassments, well endowed as it was, to the bad conduct of it's members, and a general inattention to the interests of the institution.

LETTER XVI.

BEAUFORT was bishop of *Winchester* from 1405 to 1447; and yet, notwithstanding this long episcopate, only tom. I. of *Beaufort*'s Register is to be found. This loss is much to be regretted, as it must unavoidably make a gap in the history of *Selborne* Priory, and perhaps in the list of it's priors.

[1] Yet in ten years time we find, by the *Notabilis Visitatio*, that all their relics, plate, vestments, title-deeds, &c. were in pawn.

[2] *Lowth's* Life of *Wykeham*.

In 1410 there was an election for a prior, and again in 1411.

In vol. I. p. 24, of *Beaufort's* Register, is the instrument of the election of *John Wynchestre* to be prior—the substance as follows:

Richard Elstede, senior canon, signifies to the bishop that brother *Thomas Weston,* the late prior, died *October* 18th, 1410, and was buried *November* 11th.—That the bishop's license to elect having been obtained, he and the whole convent met in the chapter-house, on the same day, about the hour of vespers, to consider of the election: that brother *John Wynchestre,* then sub-prior, with the general consent, appointed the 12th of *November, ad horam ejusdem diei capitularem,* for the business:—when they met in the chapter-house, *post missam de sancto Spiritu,* solemnly celebrated in the church;—to wit, *Richard Elstede; Thomas Halyborne; John Lemyngton,* sacrista; *John Stepe,* cantor: *Walter Ffarnham; Richard Putworth,* celarius; *Hugh London; Henry Brampton,* alias *Brompton; John Wynchestre,* senior; *John Wynchestre,* junior;—then "Proposito primitus verbo Dei," and then ympno "Veni Creator Spiritus" being solemnly sung, "cum versiculo et oratione," as usual, and his letter of license, with the appointment of the hour and place of election, being read, "*alta voce,* in valvis" of the chapter-house;—*John Wynchestre,* senior, the sub-prior, in his own behalf and that of all the canons, and by their mandate, "quasdam "monicionem et protestacionem in scriptis redactas fecit, legit, et "interposuit"—that all persons disqualified, or not having right to be present, should immediately withdraw; and protesting against their voting, &c.—that then having read the constitution of the general council "Quia propter," and explained the modes of proceeding to election, they agreed unanimously to proceed "per "viam seu formam *simplicis compromissi*"; when *John Wynchestre,* sub-prior, and all the others (the commissaries undernamed excepted) named and chose brothers *Richard Elstede, Thomas Halyborne, John Lemyngton* the sacrist, *John Stepe,* chantor, and *Richard Putworth,* canons, to be commissaries, who were sworn each to nominate and elect a fit person to be prior: and empowered by letters patent under the common seal, to be in force only until the darkness of the night of the same day;—that they, or the greater part of them, should elect for the whole convent, within the limited time, from their own number, or from the rest of the convent;—that one of them should publish their consent in common before the clergy and people:—they then all promised to receive as prior the person these five canons should fix on,

These commissaries seceded from the chapter-house to the refectory of the Priory, and were shut in with master *John Penkester*, bachelor of laws; and *John Couke* and *John Lynne*, perpetual vicars of the parish churches of *Newton* and *Selborne*; and with *Sampson Maycock*, a public notary; where they treated of the election; when they unanimously agreed on *John Wynchestre*, and appointed *Thomas Halyborne*, to chuse him in common for all, and to publish the election, as customary; and returned long before it was dark to the chapter-house, where *Thomas Halyborne* read publicly the instrument of election; when all the brothers, the new prior excepted, singing solemnly the hymn "Te Deum laudamus," *fecerunt deportari novum electum*, by some of the brothers, from the chapter-house to the high altar of the church;[1] and the hymn being sung, *dictisque versiculo et oratione consuetis in hac parte*, Thomas Halyborne, *mox tunc ibidem*, before the clergy and people of both sexes solemnly published the election *in vulgari*. Then *Richard Elstede*, and the whole convent by their proctors and nuncios appointed for the purposes, *Thomas Halyborne* and *John Stepe* required several times the assent of the elected; "et tandem post diutinas inter-"pellationes, et deliberationem providam penes se habitam, in hac "parte divine nolens, ut asseruit, resistere voluntati," within the limited time he signified his acceptance in the usual written form of words. The bishop is then supplicated to confirm their election, and do the needful, under common seal, in the chapter-house. *November* 14, 1410.

The bishop, *January* 6, 1410, *apud* Esher *in camera inferiori*, declared the election duly made, and ordered the new prior to be inducted—for this the archdeacon of *Winchester* was written to; "stallumque in choro, et locum in capitulo juxta morem "preteriti temporis," to be assigned him; and every thing beside necessary to be done.

Beaufort's Register, Vol. I.

P. 2. Taxatio spiritualis Decanatus de *Aulton*, Ecclesia de *Selebourn*, cum Capella,—xxx marc. decima x lib. iii sol. Vicaria de *Selebourn* non taxatur propter exilitatem.

P. 9. Taxatio bonorum temporalium religiosorum in Archidiac. *Wynton*.

[1] It seems here as if the canons used to *chair* their new elected prior from the chapter-house to the high altar of their convent-church. In letter XXI, on the same occasion, it is said—"et sic canentes dictum electum ad majus altare ecclesie *deduxi-*"*mus*, ut apud nos moris est".

Prior de *Selebourn* habet maneria de

Bromdene taxat. ad - - - - - - - - - -	xxx s. ii d.
Apud *Schete* ad - - - - - - - - - - -	xvii s.
P. *Selebourn* ad - - - - - - - - - - -	vi lib.
In civitate *Wynton* de reddit - - - - - -	vi lib. viii ob.
Tannaria sua taxat. ad - - - - - - - - -	x lib. s.

Summa tax. xxxviii lib. xiiii d. ob. Inde decima vi lib. s. q. ob.

LETTER XVII.

INFORMATION being sent to *Rome* respecting the havock and spoil that was carrying on among the revenues and lands of the Priory of *Selborne*, as we may suppose by the bishop of *Winchester*, it's visitor, *Pope Martin*,[1] as soon as the news of these proceedings came before him, issued forth a *bull*, in which he enjoins his commissary immediately to revoke all the property that had been alienated.

In this instrument his holiness accuses the prior and canons of having granted away (they themselves and their predecessors) to certain clerks and laymen their tithes, lands, rents, tenements, and possessions, to some of them for their lives, to others for an undue term of years, and to some again for a perpetuity, to the great and heavy detriment of the monastery: and these leases were granted, he continues to add, under their own hands, with the sanction of an oath and the renunciation of all right and claims, and under penalties, if the right was not made good.—But it will be best to give an abstract from the *bull*.

N. 298. *Pope Martin's bull* touching the revoking of certaine things alienated from the Priory of *Seleburne*. Pontif. sui. ann. 1.

"*Martinus* Eps. servus servorum Dei. Dilecto filio Priori de "*Suthvale*[2] *Wyntonien.* dioc. Salutem & apostolicam ben. Ad "audientiam nostram pervenit quam tam dilecti filii prior et "conventus monasterii de *Seleburn* per Priorem soliti gubernari "ordinis S^ti^. *Augustini Winton.* dioc. quam de predecessores eorum "decimas, terras, redditus, domos, possessiones, *vineas*,[3] et quedam

[1] *Pope Martin* V. chosen about 1417. He attempted to reform the church, but died in 1431, just as he had summoned the council of *Basil*.

[2] Should have been no doubt *Southwick*, a priory under *Portsdown*.

[3] Mr. *Barrington* is of opinion that anciently the English *vinea* was in almost every instance an orchard; not perhaps always of apples merely, but of other

"alia bona ad monasterium ipsum spectantia, datis super hoc "litteris, interpositis juramentis, factis renuntiationibus, et penis "adjectis, in gravem ipsius monasterii lesionem, nonnullis clericis "et laicis, aliquibus eorum ad vitam, quibusdam vero ad non "modicum tempus, & aliis perpetuo ad firmam, vel sub censu "annuo concesserunt; quorum aliqui dicunt super hiis a sede "ãplica in communi forma confirmationis litteras impetrasse. "Quia vero nostra interest lesis monasteriis subvenire—[He the "Pope here commands]—ea ad jus et proprietatem monasterii "studeas legitime revocare," &c.

The conduct of the religious had now for some time been generally bad. Many of the monastic societies, being very opulent, were become voluptuous and licentious, and had deviated entirely from their original institutions. The laity saw with indignation the wealth and possessions of their pious ancestors perverted to the service of sensuality and indulgence; and spent in gratifications highly unbecoming the purposes for which they were given. A total disregard to their respective rules and discipline drew on the monks and canons a heavy load of popular odium. Some good men there were who endeavoured to oppose the general delinquency; but their efforts were too feeble to stem the torrent of monastic luxury. As far back as the year 1381 *Wickliffe's* principles and doctrines had made some progress, were well received by men who wished for a reformation, and were defended and maintained by them as long as they dared; till the bishops and clergy began to be so greatly alarmed, that they procured an act to be passed by which the secular arm was empowered to support the corrupt doctrines of the church; but the first lollard was not burnt until the year 1401.

The wits also of those times did not spare the gross morals of the clergy, but boldly ridiculed their ignorance and profligacy. The most remarkable of these were *Chaucer*, and his contemporary *Robert Langelande*, better known by the name of *Piers Plowman*. The laughable tales of the former are familiar to almost every reader; while the *visions* of the latter are but in few hands. With a quotation from the *Passus Decimus* of this writer I shall conclude my letter; not only on account of the remarkable prediction therein contained, which carries with it somewhat of the

fruits; as cherries, plums, and currants. We still say a plum or cherry-orchard. See vol. III. of *Archæologia*.

In the instance above the pope's secretary might insert *vineas* merely because they were a species of cultivation familiar to him in *Italy*.

air of a prophecy; but also as it seems to have been a striking picture of monastic insolence and dissipation; and a specimen of one of the keenest pieces of satire now perhaps subsisting in any language, ancient or modern.

"Now is religion a rider, a romer by streate;
"A leader of love-days, and a loud begger;
"A pricker on a palfrey from maner to maner,
"A heape of hounds at his arse, as he a lord were.
"And but if his knave kneel, that shall his cope bring,
"He loureth at him, and asketh him who taught him curtesie.
"Little had lords to done, to give lands from her heirs,
"To religious that have no ruth if it rain on her altars.
"In many places ther they persons be, by himself at ease:
"Of the poor have they no pity, and that is her charitie;
"And they letten hem as lords, her lands lie so broad.
"And *there shal come a king*,[1] and confess you religious;
"And beate you, as the bible telleth, for breaking your rule,
"And amend monials, and monks, and chanons,
"And put hem to her penaunce *ad pristinum statum ire.*"

LETTER XVIII.

William of *Waynflete* became bishop of *Winchester* in the year 1447, and seems to have pursued the generous plan of *Wykeham* in endeavouring to reform the Priory of *Selborne*.

When *Waynflete* came to the see he found prior *Stype*, alias *Stepe*, still living, who had been elected as long ago as the year 1411.

Among my documents I find a curious paper of the things put into the custody of *Peter Bernes* the sacrist, and especially some *relics*: the title of this evidence is "N° 50, Indentura prioris de "*Selborne* quorundam tradit. *Petro Bernes* sacristæ, ibidem, ann.

[1] F. 1. a. "This prediction, although a probable conclusion concerning a king "who after a time would suppress the religious houses, is remarkable. I imagined "it might have been foisted into the copies in the reign of king *Henry* VIII. but it "is to be found in MSS. of this poem, older than the year 1400." fol. l. a. b.

"Again, where he, *Piers Plowman*, alludes to the *Knights Templars*, lately suppressed, he says,

"—— —— —— Men of holie kirk
"Shall *turn as Templars* did; *the tyme approacheth nere.*"
"This, I suppose, was a favourite doctrine in *Wickliffe*'s discourses."
Warton's Hist. of English Poetry, Vol. I. p. 282.

"Hen. VI. - - - una cum confiss. ejusdem *Petri* script." The occasion of this catalogue, or list of effects, being drawn between the prior and sacrist does not appear, nor the date when; only that it happened in the reign of *Hen.* VI. This transaction probably took place when *Bernes* entered on his office; and there is the more reason to suppose that to be the case, because the list consists of vestments and implements, and relics, such as belonged to the church of the Priory, and fell under the care of the sacrist. For the numerous *items* I shall refer the curious reader to the Appendix, and shall just mention the relics, although they are not all specified; and the state of the live stock of the monastery at that juncture.

"Item 2. *osculatōr.* argent.

"Item 1. *osculatorium* cum *osse digiti auriculār.—Sti. Johannis Baptistæ.*[1]

"Item 1. parvam *crucem* cum V. *reliquiis.*

"Item 1. *anulum* argent. et deauratum *St. Edmundi.*[2]

"Item 2. *osculat.* de coper.

"Item 1. *junctorium St. Ricardi.*[3]

"Item 1. *pecten St. Ricardi.*"[4]

The *staurum*, or live stock, is quite ridiculous, consisting only of "2 vacce, 1 sus, 4 hoggett. et 4 porcell." viz. two cows, one sow, four porkers, and four pigs.

[1] How the convent came by the bone of the little finger of *Saint John the Baptist* does not appear; probably the founder, while in *Palestine*, purchased it among the *Asiatics*, who were at that time great traders in relics. We know from the best authority that as soon as *Herod* had cruelly beheaded that holy man "his disciples "came and took up the body and buried it, and went and told *Jesus*". Matt. iv. 12.—Farther would be difficult to say.

[2] *November* 20, in the calendar, *Edmund* king and martyr, in the 9th century. See also a *Sanctus Edmundus* in *Godwin*, among the archbishops of *Canterbury*, in the 13th century; his surname *Rich*, in 1234.

[3] *April* 3, ibid. *Richard* bishop of *Chichester*, in the 13th century; his surname *De la Wich*, in 1245.

Junctorium, perhaps a *joint* or *limb* of St. *Richard;* but what particular joint the religious were not such osteologists as to specify. This barbarous word was not to be found in any dictionary consulted by the author.

[4] "*Pecten* inter ministeria sacra recensetur, quo scil. sacerdotes ac clerici, ante- "quam in ecclesiam procederent, crines pecterent. E quibus colligitur monachos, "tunc temporis, non omnino tonsos fuisse." *Du Fresne.*

The author remembers to have seen in great farm houses a family comb chained to a post for the use of the hinds when they came into their meals.

LETTER XIX.

STEPE died towards the end of the year 1453, as we may suppose pretty far advanced in life, having been prior forty-four years.

On the very day that the vacancy happened, viz. *January* 26, 1453-4, the sub-prior and convent petitioned the visitor—"vos "unicum levamen nostrum, et spem unanimiter rogamus, quatinus "eligendum ex nobis unum confratrem de gremio nostro, in nostra "religione probatum et expertem, licenciam vestram paternalem "cum plena libertate nobis concedere dignemini graciose".

Reg. Waynflete, tom. I.

Instead of the licence requested we find next a commission "custodie prioratus de *Selebourne* durante vacatione," addressed to brother *Peter Berne*, canon-regular of the priory of *Selebourne*, and of the order of St. *Augustine*, appointing him keeper of the said priory, and empowering him to collect and receive the profits and revenues, and "alia bona" of the said priory; and to exercise in every respect the full power and authority of a prior; but to be responsible to the visitor finally, and to maintain this superiority during the bishop's pleasure only. This instrument is dated from the bishop's manor-house in *Southwark*, *March* 1, 1453-4, and the seventh of his consecration.

After this transaction it does not appear that the chapter of the Priory proceeded to any election; on the contrary, we find that at six months end from the vacancy the visitor declared that a lapse had taken place; and that therefore he did confer the priorship on canon *Peter Berne*.—"Prioratum vacantem et ad "nostram collationem, seu provisionem jure ad nos in hac parte "*per lapsum* temporis legitime devoluto spectantem, tibi (sc. *P.* "*Berne*) de legitimo matrimonio procreato, &c.—conferimus," &c. This deed bears date July 28, 1454.

Reg. Waynflete, tom. I. p. 69.

On *February* 8, 1462, the visitor issued out a power of sequestration against the Priory of *Selborne* on account of notorious dilapidations, which threatened manifest ruin to the roofs, walls, and edifices, of the said convent; and appointing *John Hammond*, B.D. rector of the parish church of *Hetlegh*, *John Hylling*, vicar of the parish church of *Newton Valence*, and *Walter Gorfin*, inhabitant of the parish of *Selborne*, his sequestrators, to exact, collect, levy, and receive, all the profits and revenues of the said

convent: he adds "ac ea sub arcto, et tuto custodiatis, custo-"dirive faciatis"; as they would answer it to the bishop at their peril.

In consequence of these proceedings prior *Berne*, on the last day of *February*, and the next year, produced a state of the revenues of the Priory, N°. 381, called "A paper conteyning the "value of the manors and lands pertayning to the Priory of "*Selborne*. 4 *Edward* III. with a note of charges yssuing out "of it."

This is a curious document, and will appear in the Appendix. From circumstances in this paper it is plain that the sequestration produced good effects; for in it are to be found bills of repairs to a considerable amount.

By this evidence also it appears that there were at that juncture only four canons at the Priory;[1] and that these, and their four household servants, during this sequestration for their clothing, wages, and diet, were allowed *per ann.* xxx lib.; and that the annual pension of the lord prior, reside where he would, was to be x lib.

In the year 1468, prior *Berne*, probably wearied out by the dissensions and want of order that prevailed in the convent, resigned his priorship into the hands of the bishop.

REG. WAYNFLETE, tom. I. pars 1ma, fol. 157.

March 28, A.D. 1468. "In quadam alta camera juxta magnam "portam manerii of the bishop of *Wynton de Waltham* coram eodem "rev. patre ibidem tunc sedente, *Peter Berne*, prior of *Selborne*, "ipsum prioratum in sacras, et venerabiles manus of the bishop, viva "voce libere resignavit": and his resignation was admitted before two witnesses and a notary-public. In consequence, *March* 29th, before the bishop, "in capella manerii sui ante dicti pro tribunali "sedente, comparuerunt fratres" *Peter Berne, Thomas London, William Wyndesor*, and *William Paynell*, alias *Stretford*, canons regular of the priory, "capitulum, et conventum ejusdem ecclesie "facientes; ac jus et voces in electione futura prioris dicti prio-"ratus solum et in solidum, ut asseruerunt, habentes"; and after the bishop had notified to them the vacancy of a prior, with his free license to elect, deliberated awhile, and then, by way of compromise, as they affirmed, unanimously transferred their right

[1] If bishop *Wykeham* was so disturbed (see *Notab. Visitatio*) to find the number of canons reduced from fourteen to eleven, what would he have said to have seen it diminished below one third of that number?

of election to the bishop before witnesses. In consequence of this the bishop, after full deliberation, proceeded, *April* 7th, "in "capella manerii sui de *Waltham*," to the election of a prior: "et "fratrem *Johannem Morton*, priorem ecclesie conventualis de "*Reygate* dicti ordinis S^ti^. *Augustini Wynton.* dioc. in priorem vice et "nomine omnium et singulorum canonicorum predictorum elegit, "in ordine sacerdotali, et etate licita constitutum, &c." And on the same day, in the same place, and before the same witnesses, *John Morton* resigned to the bishop the priorship of *Reygate viva voce.* The bishop then required his consent to his own election; "qui licet in parte renitens tanti reverendi patris se confirmans," obeyed, and signified his consent *oraculo vive vocis.* Then was there a mandate citing any one who would gainsay the said election to appear before the bishop or his commissary in his chapel at *Farnham* on the second day of *May* next. The dean of the deanery of *Aulton* then appeared before the chancellor, his commissary, and returned the citation or mandate dated *April* 22d, 1468, with signification, in writing, of his having published it as required, dated *Newton Valence, May* 1st, 1468. This certificate being read, the four canons of *Selborne* appeared and required the election to be confirmed; *et ex super abundanti* appointed *William Long* their proctor to solicit in their name that he might be canonically confirmed. *John Morton* also appeared, and proclamation was made; and no one appearing against him, the commissary pronounced all absentees contumacious, and precluded them from objecting at any other time; and, at the instance of *John Morton* and the proctor, confirmed the election by his decree, and directed his mandate to the rector of *Hedley,* and the vicar of *Newton Valence* to install him in the usual form.

Thus, for the first time, was a person, a stranger to the convent of *Selborne,* and never canon of that monastery, elected prior; though the style of the petitions in former elections used to run thus,—"Vos - - - - rogamus quatinus eligendum ex *nobis* unum "*confratrem* de *gremio nostro,*—licentiam vestram—nobis con- "cedere dignemini".

LETTER XX.

Prior *Morton* dying in 1471, two canons, by themselves, proceeded to election, and chose a prior; but two more (one of them *Berne*) complaining of not being summoned, objected to the

proceedings as informal; till at last the matter was compromised that the bishop should again, for that turn, nominate as he had before. But the circumstances of this election will be best explained by the following extract:

REG. WAYNFLETE, tom. II. pars 1ma, fol. 7.

Memorandum. A.D. 1471. August 22.

William Wyndesor, a canon-regular of the Priory of *Selborne,* having been elected prior on the death of brother *John,* appeared in person before the bishop in his chapel at *South Waltham.* He was attended on this occasion by *Thomas London* and *John Bromesgrove,* canons, who had elected him. *Peter Berne* and *William Stratfeld,* canons, also presented themselves at the same time, complaining that in this business they had been overlooked, and not summoned; and that therefore the validity of the election might with reason be called in question, and quarrels and dissensions might probably arise between the newly chosen prior and the parties thus neglected.

After some altercation and dispute they all came to an agreement with the new prior that what had been done should be rejected and annulled; and that they would again, for this turn, transfer to the bishop their power to elect, order, and provide them another prior, whom they promised unanimously to admit.

The bishop accepted of this offer before witnesses; and on *September* 27, in an inner chamber near the chapel above-mentioned, after full deliberation, chose brother *Thomas Fairwise,* vicar of *Somborne,* a canon-regular of Saint *Augustine* in the Priory of *Bruscough,* in the diocese of *Coventry* and *Litchfield,* to be prior of *Selborne.* The form is nearly as above in the last election. The canons are again enumerated; *W. Wyndesor,* sub-prior, *P. Berne, T. London, W. Stratfeld, J. Bromesgrove,* who had formed the chapter, and had requested and obtained license to elect, but had unanimously conferred their power on the bishop. In consequence of this proceeding, the bishop taking the business upon himself, that the Priory might not suffer detriment for want of a governor, appoints the aforesaid *T. Fairwise* to be prior. A citation was ordered as above for gainsayers to appear *October* 4th, before the bishop or his commissaries at *South Waltham;* but none appearing, the commissaries admitted the said *Thomas,* ordered him to be installed, and sent the usual letter to the convent to render him due obedience.

Thus did the bishop of *Winchester* a second time appoint a stranger to be prior of *Selborne*, instead of one chosen out of the chapter. For this seeming irregularity the visitor had no doubt good and sufficient reasons, as probably may appear hereafter.

LETTER XXI.

WHATEVER might have been the abilities and disposition of Prior *Fairwise*, it could not have been in his power to have brought about any material reformation in the Priory of *Selborne*, because he departed this life in the month of *August* 1472, before he had presided one twelvemonth.

As soon as their governor was buried the chapter applied to their visitor for leave to choose a new prior, which being granted, after deliberating for a time, they proceeded to an election by a *scrutiny*. But as this mode of voting has not been described but by the mere form in the *Appendix*, an extract from the bishop's register, representing the manner more fully, may not be disagreeable to several readers.

WAYNFLETE REG. tom. II. pars 1ma, fol. 15.

"Reverendo &c. ac nostro patrono graciosissimo vestri humiles, "et devote obedientie filii," &c.

To the right reverend Father in God, and our most gracious patron, we, your obedient and devoted sons, *William Wyndesor*, president of the chapter of the Priory of *Selborne*, and the convent of that place, do make known to your lordship, that our priorship being lately vacant by the death of *Thomas Fairwise*, our late prior, who died August 11th, 1472, having committed his body to decent sepulture, and having requested, according to custom, leave to elect another, and having obtained it under your seal, we, *William Wyndesor*, president of the convent, on the 29th of August, in our chapter-house assembled, and making a chapter, taking to us in this business *Richard ap Jenkyn*, and *Galfrid Bryan*, chaplains, that our said priory might not by means of this vacancy incur harm or loss, unanimously agreed on *August* the last for the day of the election; on which day, having first celebrated mass, "De sancto spiritu," at the high altar, and having called a chapter by tolling a bell about ten o' the clock, we, *William Wyndesor*,

president, *Peter Berne, Thomas London,* and *William Stratfeld,* canons, who alone had voices, being the only canons, about ten o' the clock, first sung "Veni Creator," the letters and license being read in the presence of many persons there. Then *William Wyndesor,* in his own name, and that of all the canons, made solemn proclamation, enjoining all who had no right to vote to depart out of the chapter-house. When all were withdrawn except *Guyllery de Lacuna,* in decretis Baccalarius, and *Robert Peverell,* notary-public, and also the two chaplains, the first was requested to stay, that he might direct and inform us in the mode of election; the other, that he might record and attest the transactions; and the two last that they might be witnesses to them.

Then, having read the constitution of the general council "Quia propter," and the forms of elections contained in it being sufficiently explained to them by *De Lacuna,* as well in Latin as the vulgar tongue, and having deliberated in what mode to proceed in this election, they resolved on that of *scrutiny.* Three of the canons, *Wyndesor, Berne,* and *London,* were made *scrutators: Berne, London,* and *Stratfeld,* chusing *Wyndesor; Wyndesor, London,* and *Stratfeld,* chusing *Berne; Wyndesor, Berne,* and *Stratfeld,* chusing *London.*

They were empowered to take each other's vote, and then that of *Stratfeld;* "et ad inferiorem partem angularem" of the chapter-house, "juxta ostium ejusdem declinentes," with the other persons (except *Stratfeld,* who staid behind), proceeded to voting, two swearing, and taking the voice of the third, in succession, privately. *Wyndesor* voted first: "Ego credo *Petrum* "*Berne* meliorem et utiliorem ad regimen istius ecclesie, et in "ipsum consentio, ac eum nomino," &c. *Berne* was next sworn, and in like manner nominated *Wyndesor; London* nominated *Berne: Stratfeld* was then called and sworn, and nominated *Berne.*

"Quibus in scriptis redactis," by the notary-public, they returned to the upper part of the chapter-house, where by *Wyndesor* "sic purecta[1] fecerunt in communi," and then solemnly, in form written, declared the election of *Berne:* when all, "antedicto "nostro electo excepto, approbantes et ratificantes, cepimus de- "cantare solemniter '*Te Deum Laudamus,*' et sic canentes dictum "electum ad majus altare ecclesie deduximus, ut apud nos est

[1] [*Peracta?*]

"moris." Then *Wyndesor* "electionem clero et populo infra "chorum dicte ecclesie congregatis publicavit, et personam electi "publice et personaliter ostendit". We then returned to the chapter-house, except our prior; and *Wyndesor* was appointed by the other two their proctor, to desire the assent of the elected, and to notify what had been done to the bishop; and to desire him to confirm the election, and do whatever else was necessary. Then their proctor, before the witnesses, required *Berne*'s assent in the chapter-house: "qui quidem instanciis et precibus multi- "plicatis devictus," consented, "licet indignus electus," in writing. They therefore requested the bishop's confirmation of their election "sic canonice et solemniter celebrata," &c. &c. Sealed with their common seal, and subscribed and attested by the notary. Dat. in the chapter-house *September* 5th, 1472.

In consequence, *September* 11th, 1472, in the bishop's chapel at *Esher*, and before the bishop's commissary, appeared *W. Wyndesor*, and exhibited the above instrument, and a mandate from the bishop for the appearance of gainsayers of the election there on that day:—and no one appearing, the absentees were declared contumacious, and the election confirmed; and the vicar of *Aulton* was directed to induct and install the prior in the usual manner.

Thus did canon *Berne*, though advanced in years, reassume his abdicated priorship for the second time, to the no small satisfaction, as it may seem, of the bishop of *Winchester*, who professed, as will be shown not long hence, an high opinion of his abilities and integrity.

LETTER XXII.

As prior *Berne*, when chosen in 1454, held his priorship only to 1468, and then made a voluntary resignation, wearied and disgusted, as we may conclude, by the disorder that prevailed in his convent; it is no matter of wonder that, when re-chosen in 1472, he should not long maintain his station; as old age was then coming fast upon him, and the increasing anarchy and misrule of that declining institution required unusual vigour and resolution to stem that torrent of profligacy which was hurrying it on to it's dissolution. We find, accordingly, that in 1478 he resigned his dignity again into the hands of the bishop.

WAYNFLETE REG. fol. 55.

Resignatio Prioris de Seleborne.

May 14, 1478. *Peter Berne* resigned the priorship. *May* 16 the bishop admitted his resignation "in manerio suo *de Waltham*," and declared the priorship void; "et priorat. solacio destitu-"tum esse"; and granted his letters for proceeding to a new election: when all the religious, assembled in the chapter-house, did transfer their power under their seal to the bishop, by the following public instrument.

"In Dei nomine Amen," &c. A.D. 1478, Maii 19. In the chapter-house for the election of a prior for that day, on the free resignation of *Peter Berne*, having celebrated in the first place mass at the high altar "De spiritu sancto," and having called a chapter by tolling a bell, *ut moris est;* in the presence of a notary and witnesses appeared personally *Peter Berne, Thomas Ashford, Stephen Clydegrove*, and *John Ashton*, presbyters, and *Henry Canwood*,[1] in chapter assembled; and after singing the hymn "*Veni Creator Spiritus*," "cum versiculo et oratione '*Deus qui corda*'; "declarataque licentia Fundatoris et Patroni; futurum priorem "eligendi concessa, et constitutione consilii generalis que incipit "'*Quia propter*' declaratis; viisque per quas possent ad hanc "electionem procedere," by the *decretorum doctorem*, whom the canons had taken to direct them—they all and every one "dixerunt et affirmarunt se nolle ad aliquam viam procedere": —but, for this turn only, renounced their right, and unanimously transferred their power to the bishop the ordinary of the place, promising to receive whom he should provide; and appointed a proctor to present the instrument to the bishop under their seal; and required their notary to draw it up in due form, &c. subscribed by the notary.

After the visitor had fully deliberated on the matter, he proceeded to the choice of a prior, and elected, by the following instrument, *John Sharp*, alias *Glastenbury*.

Fol. 56. PROVISIO PRIORIS per EPM.

Willmus, &c. to our beloved brother in CHRIST *John Sharp*, alias *Glastenbury*, Ecclesie conventualis de *Bruton*, of the order of St.

[1] Here we see that all the canons were changed in six years; and that there was quite a new chapter, *Berne* excepted, between 1472 and 1478; for, instead of *Wyndesor, London*, and *Stratfeld*, we find *Ashford, Clydegrove, Ashton*, and *Canwood*, all new men, who were soon gone in their turn off the stage, and are heard of no more. For, in six years after, there seem to have been no canons at all.

Austin, in the diocese of *Bath* and *Wells*, canon-regular—*salutem*, &c. "De tue circumspectionis industria plurimum confidentes, "et te virum providum et discretum, literarum scientia, et mori- "bus merito commendandum," &c.—do appoint you prior—under our seal. "Dat. in manerio nostro de *Suthwaltham*, *May* 20, "1478, et nostre Consec. 31."

Thus did the bishop, three times out of the four that he was at liberty to nominate, appoint a prior from a distance, a stranger to the place, to govern the convent of *Selborne*, hoping by this method to have broken the cabal, and to have interrupted that habit of mismanagement that had pervaded the society: but he acknowledges, in an evidence lying before us, that he never did succeed to his wishes with respect to those late governors,— "quos tamen male se habuisse, et inutiliter administrare, et "administrasse usque ad presentia tempora post debitam in- "vestigationem, &c. invenit". The only time that he appointed from among the canons, he made choice of *Peter Berne*, for whom he had conceived the greatest esteem and regard.

When prior *Berne* first relinquished his priorship, he returned again to his former condition of canon, in which he continued for some years: but when he was re-chosen, and had abdicated a second time, we find him in a forlorn state, and in danger of being reduced to beggary, had not the bishop of *Winchester* interposed in his favour, and with great humanity insisted on a provision for him for life. The reason for this difference seems to have been, that, in the first case, though in years, he might have been hale and capable of taking his share in the duty of the convent; in the second, he was broken with age, and no longer equal to the functions of a canon.

Impressed with this idea the bishop very benevolently interceded in his favour, and laid his injunctions on the new-elected prior in the following manner.

Fol. 56. "In Dei nomine Amen. Nos *Willmus*, &c. con- "siderantes *Petrum Berne*," late prior, "in administratione "spiritualium et temporalium prioratus laudabiliter vixisse et "rexisse; ipsumque senio et corporis debilitate confractum; ne "in opprobrium religionis *mendicari cogatur*;—eidem annuam "pensionem a Domino *Johanne Sharp*, alias *Glastonbury*, priore "moderno," and his successors, and, from the Priory or church, to be payed every year during his life, "de voluntate et ex con- "sensu expressis" of the said *John Sharp*, "sub ea que sequitur "forma verborum—assignamus":

1st. That the said prior and his successors, for the time being, *honeste exhibebunt* of the fruits and profits of the priorship, "eidem "esculenta et poculenta," while he remained in the Priory "sub "consimili portione eorundem prout convenienter priori," for the time being, *ministrari contigerit;* and in like manner *uni famulo,* whom he should chuse to wait on him, as to the *servientibus* of the prior.

Item. "Invenient seu exhibebunt eidem unam honestam "cameram" in the Priory, "cum focalibus necessariis seu op- "portunis ad eundem."

Item. "We will, ordain, &c. to the said *P. Berne,* an annual "pension of ten marks, from the revenue of the Priory, to be "paid by the hands of the prior quarterly."

The bishop decrees farther, that *John Sharp,* and his successors, shall take an oath to observe this injunction, and that before their installation.

"Lecta et facta sunt hæc in quodam alto oratorio," belonging to the bishop at *Suthwaltham, May* 25, 1478, in the presence of *John Sharp,* who gave his assent, and then took the oath before witnesses, with the other oaths before the chancellor, who decreed he should be inducted and installed; as was done that same day.

How *John Sharp,* alias *Glastonbury,* acquitted himself in his priorship, and in what manner he made a vacancy, whether by resignation, or death, or whether he was removed by the visitor, does not appear; we only find that some time in the year 1484 there was no prior, and that the bishop nominated canon *Ashford* to fill the vacancy.

LETTER XXIII.

This *Thomas Ashford* was most undoubtedly the last prior of *Selborne;* and therefore here will be the proper place to say something concerning a list of the priors, and to endeavour to improve that already given by others.

At the end of bishop *Tanner's Notitia Monastica,* the folio edition, among *Brown Willis's Principals* of *Religious Houses* occur the names of eleven of the priors of *Selborne,* with dates. But this list is imperfect, and particularly at the beginning; for though the Priory was founded in 1232, yet it commences with *Nich. de Cantia,* elected in 1262; so that for the first thirty years no prior is mentioned; yet there must have been one or more. We were in hopes that the register of *Peter de Rupibus* would

have rectified this omission; but, when it was examined, no information of the sort was to be found. From the year 1410 the list is much corrected and improved; and the reader may depend on it's being thence forward very exact.

A List *of the* Priors *of* Selborne Priory, *from* Brown Willis's Principals *of* Religious Houses, *with additions within* [ ] *by the author.*

[*John* - - - was prior, *sine dat.*] [1]
Nich. de Cantia el. - - - - - - - - 1262.
[*Peter* —— was prior in - - - - - - 1271.]
[*Richard* —— was prior in - - - - - 1280.]
Will. Basing was prior in - - - - - - 1299.
Walter de Insula el. in - - - - - - 1324.
[Some difficulties, and a devolution; but the election confirmed by bishop *Stratford.*]
John de Wintōn - - - - - - - - 1339.
Thomas Weston - - - - - - - - 1377.
John Winchester [*Wynchestre*] - - - - - 1410.
[Elected by bishop *Beaufort* "per viam vel formam "simplicis compromissi".]
[*John Stype,* alias *Stepe,* in - - - - - 1411.]
Peter Bene [alias *Berne* or *Bernes,* appointed keeper, and, by lapse to bishop *Wayneflete,* prior] in - - - 1454.
[He resigns in 1468.]
John Morton [prior of *Reygate*] in - - - - 1468.
[The canons by compromise transfer the power of election to the bishop.]
Will. Winsor [*Wyndesor,* prior for a few days] - - 1471.
[but removed on account of an irregular election.]
Thomas Farwill [*Fairwise,* vicar of *Somborne*] - - 1471.
[by compromise again elected by the bishop.]
[*Peter Berne,* re-elected by scrutiny in - - - 1472,]
[resigns again in 1478.]
John Sharper [*Sharp*] alias *Glastonbury* - - - 1478.
[Canon-reg. of *Bruton,* elected by the bishop by compromise.]
[*Thomas Ashford,* canon of *Selborne,* last prior elected by the bishop of *Winchester,* some time in the year - 1484, and deposed at the dissolution.]

[1] See, in Letter XI. of these Antiquities, the reason why prior *John* - - -, who had transactions with the *Knights Templars,* is placed in the list before the year 1262.

LETTER XXIV.

Bishop *Wayneflete*'s efforts to continue the Priory still proved unsuccessful; and the convent, without any canons, and for some time without a prior, was tending swiftly to it's dissolution.

When *Sharp*'s, alias *Glastonbury*'s, priorship ended does not appear. The bishop says that he had been obliged to remove some priors for mal-administration: but it is not well explained how that could be the case with any, unless with *Sharp;* because all the others, chosen during his episcopate, died in their office, *viz. Morton* and *Fairwise; Berne* only excepted, who relinquished twice voluntarily, and was moreover approved of by *Wayneflete* as a person of integrity. But the way to shew what ineffectual pains the bishop took, and what difficulties he met with, will be to quote the words of the libel of his proctor *Radulphus Langley*, who appeared for the bishop in the process of the impropriation of the Priory of *Selborne*. The extract is taken from an attested copy.

"*Item*—that the said bishop—dicto prioratui et personis ejus-"dem pie compatiens, sollicitudines pastorales, labores et dili-"gentias gravissimas quam plurimas, tam per se quam per suos, "pro reformatione premissorum impendebat: et aliquando illius "loci prioribus, propter malam et inutilem administrationem, "et dispensationem bonorum predicti prioratus, suis demeritis "exigentibus, amotis; alios priores in quorum circumspectione "et diligentia confidebat, prefecit: quos tamen male se habuisse "ac inutiliter administrare, et administrasse, usque ad presentia "tempora post debitam investigationem, &c. invenit." So that he despaired with all his care—"statum ejusdem reparare vel "restaurare: et considerata temporis malicia, et preteritis timendo "et conjecturando futura, de aliqua bona et sancta religione "ejusdem ordinis, &c. juxta piam intentionem primevi fundatoris "ibidem habend. desperatur."

William Wainfleet, bishop of *Winchester*, founded his college of Saint *Mary Magdalene*, in the university of *Oxford*, in or about the year 1459; but the revenues proving insufficient for so large and noble an establishment, the college supplicated the founder to augment it's income by putting it in possession of the estates belonging to the Priory of *Selborne*, now become a deserted convent, without canons or prior. The president and fellows state the circumstances of their numerous institution and scanty

provision, and the ruinous and perverted condition of the Priory. The bishop appoints commissaries to inquire into the state of the said monastery; and, if found expedient, to confirm the appropriation of it to the college, which soon after appoints attornies to take possession, *September* 24, 1484. But the way to give the reader a thorough insight respecting this transaction, will be to transcribe a farther proportion of the process of the impropriation from the beginning, which will lay open the manner of proceeding, and shew the consent of the parties.

Impropriatio Selborne, 1485.

"Universis sancte matris ecclesie filiis, &c. *Ricardus* Dei "gratia *prior* ecclesie conventualis de *Novo Loco*, &c.[1] ad uni- "versitatem vestre notitie deducimus, &c. quod coram nobis "commissario predicto in ecclesia parochiali S^ti^. *Georgii de Essher* "dict. *Winton.* dioc. 3°. die *Augusti*, A. D. 1485. Indictione "tertia pontificat. *Innocentii* 8^vi^. ann. 1^mo^. judicialiter comparuit "venerabilis vir *Jacobus Preston*, S. T. P. infrascriptus, et exhibuit "literas commissionis—quas quidem per magistrum *Thomam* "*Somercotes* notarium publicum, &c. legi fecimus, tenorem "sequentem in se continentes." The same as N°. 103, but dated —"In manerio nostro *de Essher, Augusti* 1^mo^. A.D. 1485, et nostre "consec. anno 39." [N°. 103 is repeated in a book containing the like process in the preceding year by the same commissary, in the parish church of St. *Andrew* the apostle, at *Farnham, Sept.* 6th, anno 1484.] "Post quarum literarum lecturam—dictus "magister *Jacobus Preston*, quasdam procuratorias literas mag. "*Richardi Mayewe* presidentis, ut asseruit, *collegii beate Marie* "*Magdalene*, &c. sigillo rotundo communi, &c. in cera rubea "impresso sigillatas realiter exhibuit, &c. et pro eisdem dn̄is "suis, &c. fecit se partem, ac nobis supplicavit ut juxta formam "in eisdem traditam procedere dignaremur, &c." After these proclamations no contradictor or objector appearing—"ad in- "stantem petitionem ipsius mag. *Jac. Preston*, procuratoris, &c.

[1] *Ecclesia Conventualis* de *Novo Loco* was the monastery afterwards called the *New Minster*, or *Abbey* of *Hyde*, in the city of *Winchester*. Should any intelligent reader wonder to see that the *prior* of *Hyde Abbey* was commissary to the bishop of *Wintōn*, and should conclude that there was a mistake in titles, and that the *abbot* must have been here meant; he will be pleased to recollect that this person was the second in rank; for, "next under the abbot, in every abbey, was the prior". Pref. to Notit. Monast. p. xxix. Besides, abbots were great personages, and too high in station to submit to any office under the bishop.

"procedendum fore decrevimus vocatis jure vocandis; nec non "mag. *Tho. Somercotes,* &c. in actorum nostrorum scribam nomina- "vimus. Consequenter et ibidem tunc comparuit magister *Michael* "*Clyff,* &c. et exhibuit in ea parte procuratorium suum," for the prior and convent of the cathedral of *Winton,* "et fecit se partem "pro eisdem.—Deinde comparuit coram nobis, &c. honestus vir "*Willmus Cowper,*" proctor for the bishop as patron of the Priory of *Selborne,* and exhibited his "procuratorium, &c." After these were read in the presence of *Clyff* and *Cowper,* "*Preston,* viva voce," petitioned the commissary to annex and appropriate the Priory of *Selborne* to the college—"propter quod fructus, redditus, "et proventus ejusdem coll. adeo tenues sunt, et exiles, quod ad "sustentationem ejus, &c. non sufficiunt."—The commissary, "ad "libellandum et articulandum in scriptis"—adjourned the court to the 5th of *August,* then to be held again in the parish church of *Essher.*

W. Cowper being then absent, *Radulphus Langley* appeared for the bishop, and was admitted his proctor. *Preston* produced his libel or article in scriptis for the union, &c. "et admitti petiit "eundem cum effectu; cujus libelli tenor sequitur.—In Dei "nomine, Amen. Coram nobis venerabili in Christo patre "*Richardo,* priore, &c. de *Novo Loco,* &c. commissario, &c." Part of the college of Magd. dicit, allegat, and in his "scriptis proponit, &c."

"*Imprimis*"—that said college consists of a president and eighty scholars, besides sixteen choristers, thirteen "servientes inibi "altissimo famulantibus, et in scientiis plerisque liberalibus, pre- "sertim in sacra theologia studentibus, nedum ad ipsorum presi- "dentis et scholarium pro presenti et imposterum, annuente deo, "incorporandum in eodem relevamen; verum etiam ad omnium "et singulorum tam scholarium quam religiosorum cujuscunque "ordinis undequaque illuc confluere pro salubri doctrina volentium "utilitatem multiplicem ad incrementa virtutis fideique catholice "stabilimentum. Ita videlicet quod omnes et singuli absque "personarum seu nationum delectu illuc accedere volentes, "lecturas publicas et doctrinas tam in grammatica in loco ad "collegium contiguo, ac philosophiis morali et naturali, quam "in sacra theologia in eodem collegio perpetuis temporibus "continuandas libere atque gratis audire valeant et possint ad "laudem gloriam et honorem Dei, &c. extitit fundatum et "stabilitum."

For the first *item* in this process see the beginning of this

letter. Then follows *item* the second—that the revenues of the college "non sufficiunt his diebus". *Item* — that the premisses are true, &c. "et super eisdem laborarunt, et laborunt "publica vox et fama. Unde facta fide petit pars eorundem that "the Priory be annexed to the college: ita quod dicto prioratu "vacante liceat iis ex tunc to take possession, &c." This libel, with the express consent of the other proctors, we, the commissary, admitted, and appointed the sixth of *August* for proctor *Preston* to prove the premisses.

Preston produced witnesses, *W. Gyfford*, S. T. P. *John Nele*, A. M. *John Chapman*, chaplain, and *Robert Baron*, literatus, who were admitted and sworn, when the court was prorogued to the 6th of *August;* and the witnesses, on the same 5th of *August*, were examined by the commissary, "in capella infra manerium "de *Essher* situata, secrete et singillatim". Then follows the "literæ procuratoriæ": first that of the college, appointing *Preston* and *Langport* their proctors, dated *August* 30th, 1484; then that of the prior and convent of the cathedral of *Wintōn*, appointing *David Husband* and *Michael Cleve*, dated *September* 4th, 1484: then that of the bishop, appointing *W. Gyfford, Radulphus Langley*, and *Will. Cowper*, dated *September* 3rd, 1484. Consec. 38°.—"Quo die adveniente in dicta ecclesia parochiali," appeared "coram nobis" *James Preston* to prove the contents of his libel, and exhibited some letters testimonial with the seal of the bishop, and these were admitted; and consequenter *Preston* produced two witnesses, viz. Dominum *Thomam Ashforde nuper priorem dicti prioratus*, et *Willm. Rabbys*, literatum, who were admitted and sworn, and examined as the others, by the commissary; "tunc & ibidem assistente scriba secrete & singillatim"; and their depositions were read and made public, as follows:

Mr. *W. Gyfford*, S. T. P. aged 57, of the state of *Magd. Coll.* &c. as before:

Mr. *John Nele*, aged 57, proves the articles also:

Robert Baron, aged 56:

Johannes Chapman, aged 35, also affirmed all the five articles.

Dompnus *Thomas Ashforde*, aged 72 years—"dicit 2$^{\text{dum}}$ 3$^{\text{um}}$ 4$^{\text{um}}$ "articulos in eodem libello contentos, concernentes statum dicti "prioratus de *Selebourne*, fuisse et esse veros".

W. Rabbys, ætat. 40 ann. agrees with *Gyfford*, &c.

Then follows the letter from the bishop, "in subsidium pro-"bationis," above-mentioned.—"*Willmus*, &c. salutem, &c. noverint

"universitas vestra, quod licet nos prioratui de *Selebourne*, &c. pie "compacientes sollicitudines pastorales, labores, diligentias quam "plurimas per nos & commissarios nostros pro reformatione "status ejus impenderimus, justicia id poscente; nihilominus "tamen," &c. as in the article—to "desperatur," dated "in "manerio nostro de *Essher, Aug.* 3d, 1485, & consec. 39". Then, on the 6th of *August, Preston,* in the presence of the other proctors, required that they should be compelled to answer; when they all allowed the articles "fuisse & esse vera"; and the commissary at the request of *Preston,* concluded the business, and appointed *Monday, August* 8th, for giving his decree in the same church of *Essher;* and it was that day read, and contains a recapitulation, with the sentence of union, &c. witnessed and attested.

As soon as the president and fellows of *Magdalen college* had obtained the decision of the commissary in their favour, they proceeded to supplicate the *pope,* and to entreat his holiness that he would give his sanction to the sentence of union. Some difficulties were started at *Rome;* but they were surmounted by the college agent, as appears by his letters from that city. At length *pope Innocent* VIII. by a *bull*[1] bearing date the 8th day of *June,* in the year of our Lord 1486, and in the second year of his pontificate, confirmed what had been done, and suppressed the convent.

Thus fell the considerable and well-endowed Priory of *Selborne* after it had subsisted about two hundred and fifty-four years: about seventy-four years after the suppression of Priories alien by *Henry* V. and about fifty years before the general dissolution of monasteries by *Henry* VIII. The founder, it is probable, had fondly imagined that the sacredness of the institution, and the pious motives on which it was established, might have preserved it inviolate to the end of time—yet it fell,

> "To teach us that God attributes to *place*
> "No sanctity, if none be thither brought
> "By men, who there frequent, or therein dwell."
>
> *Milton's Paradise Lost.*[2]

[1] There is nothing remarkable in this *bull* of *pope Innocent* except the statement of the annual revenue of the Priory of *Selborne,* which is therein estimated at 160 *flor. auri;* whereas bishop *Godwin* sets it at 337*l.* 15*s.* 6½*d.* Now a *floren,* so named, says Camden, because made by *Florentines,* was a gold coin of king *Edward* III. in value 6*s.* whereof 160 is not one seventh part of 337*l.* 15*s.* 6½*d.*

[2] [XI., 836-39.]

LETTER XXV.

WAINFLEET did not long enjoy the satisfaction arising from this new acquisition; but departed this life in a few months after he had effected the union of the Priory with his late founded college; and was succeeded in the see of *Winchester* by *Peter Courtney*, some time towards the end of the year 1486.

In the beginning of the following year the new bishop released the president and fellows of *Magdalen College* from all actions respecting the Priory of *Selborne;* and the prior and convent of Saint *Swithun*, as the chapter of *Winchester* cathedral, confirmed the release.[1]

N. 293. "Relaxatio *Petri* epi *Wintōn Ricardo Mayew*, Presidenti "omnium actionum occasione indempnitatis sibi debite pro unione "Prioratus de *Selborne* dicto collegio. *Jan.* 2. 1487. et translat. "anno 1°."

N. 374. "Relaxatio *prioris* et *conventus* S^ti^. *Swithini Wintōn* "confirmans relaxationem *Petri* ep. *Winton.*" 1487. *Jan.* 13.

Ashforde, the deposed prior, who had appeared as an evidence for the impropriation of the Priory at the age of seventy-two years, that he might not be destitute of a maintenance, was pensioned by the college to the day of his death; and was living on till 1490, as appears by his acquittances.

REG. A. ff. 46.

"Omnibus Christi fidelibus ad quos presens scriptum pervenerit, "*Richardus Mayew*, presidens, &c. et scolares, salutem in Domino."

"Noveritis nos prefatos presidentem et scolares dedisse, con- "cessisse, et hoc presenti scripto confirmasse *Thome Ashforde*, "*capellano*, quendam annualem redditum sex librarum tresdecim "solidorum et quatuor denariorum bone et legalis monete Anglie "—ad terminum vite prefati *Thome*"—to be paid from the possessions of the college in *Basingstoke.*—"In cujus rei testimonium "sigillum nostrum commune presentibus apponimus. Dat. Oxon. "in coll. nostro supra dicto primo die mensis *Junii* anno regis "*Ricardi* tertii secundo," viz. 1484. The college in their grant to *Ashforde*, style him only *capellanus;* but the annuitant very naturally, and with a becoming dignity, asserts his late title in his acquittances, and identifies himself by the addition of *nuper priorem*, or late prior.

[1] The bishops of Winchester were patrons of the Priory.

As, according to the persuasion of the times, the depriving the founder and benefactors of the Priory of their masses and services would have been deemed the most impious of frauds, bishop *Wainfleet*, having by statute ordained four *obits* for himself to be celebrated in the chapel of *Magdalen College*, enjoined in one of them a special collect for the anniversary of *Peter de Rupibus*, with a particular prayer—"*Deus Indulgentiarum*".

The college also sent *Nicholas Langrish*, who had been a chantry priest at *Selborne*, to celebrate mass for the souls of all that had been benefactors to the said Priory and college, and for all the faithful who had departed this life.

N. 356. *Thomas Knowles*, presidens, &c.—"damus et concedi-"mus *Nicholao Langrish* quandum capellaniam, vel salarium, sive "alio quocunque nomine censeatur, in prioratu *quondam* de *Selborne* "pro termino 40 annorum, si tam diu vixerit. Ubi dictus mag^r. "*Nicholaus* celebrabit pro animabus omnium benefactorum dicti "prioratus et coll. nostri, et omnium fidelium defunctorum. "Insuper nos, &c. concedimus eidem ibidem celebranti in sus-"tentationem suam quandam annualem pensionem sive annuitatem "octo librarum &c.—in dicta capella dicti prioratus—concedimus "duas cameras contiguas ex parte boreali dicte capelle, cum *una* "*coquina*, et cum uno stabulo conveniente pro tribus equis, cum "pomerio eidem adjacente voc. le *Orcheyard*—Preterea 26s. 8d. "per ann. ad inveniendum unum clericum ad serviendum sibi ad "altare, et aliis negotiis necessariis ejus."—His wood to be granted him by the president on the progress.—He was not to absent himself beyond a certain time; and was to superintend the coppices, wood, and hedges.——"Dat. 5^to. die *Julii*. an°. *Hen.* VIII^vi. 36°." [viz. 1546.]

Here we see the Priory in a new light, reduced as it were to the state of a *chantry*, without prior and without canons, and attended only by a priest, who was also a sort of bailiff or woodman, his assistant clerk, and his female cook.[1] *Owen Oglethorpe*, president, and *Magd. Coll.* in the fourth year of *Edward* VI. viz. 1551, granted an annuity of ten pounds a year for life to *Nich. Langrish*, who, from the preamble, appears then to have been fellow of that society: but, being now superannuated for business, this pension is granted him for thirty years, if he should live so long. It is said of him—"cum jam sit provectioris etatis quam ut," &c.

Laurence Stubb, president of *Magd. Coll.* leased out the Priory

[1] [*Coquina* means a kitchen, not a female cook.]

lands to *John Sharp*, husbandman, for the term of twenty years, as early as the seventeenth year of *Henry* VIII.—viz. 1526: and it appears that *Henry Newlyn* had been in possession of a lease before, probably towards the end of the reign of *Henry* VII. *Sharp's* rent was vi^{li}. *per ann.*—Regist. B. p. 43.

By an abstract from a lease lying before me, it appears that *Sharp* found a house, two barns, a stable, and a *duf*-house [*dove*-house] built, and standing on the south side of the old Priory, and late in the occupation of *Newlyn*. In this abstract also are to be seen the names of all the fields, many of which continue the same to this day.[1] Of some of them I shall take notice, where any thing singular occurs.

And here first we meet with *Paradyss* [Paradise] *mede*. Every convent had its *Paradise;* which probably was an enclosed orchard, pleasantly laid out, and planted with fruit-trees. *Tylehouse* grove, so distinguished from having a *tiled house* near it.[2] *Butt-wood close;* here the servants of the Priory and the village-swains exercised themselves with their long bows, and shot at a mark against a butt, or bank.[3] *Cundyth* [conduit] *wood:* the engrosser of the lease not understanding this name has made a strange barbarous word of it. *Conduit-wood* was and is a steep, rough cow-pasture, lying above the Priory, at about a quarter of a mile to the south-west. In the side of this field there is a spring of water that never fails; at the head of which a cistern was built which communicated with leaden pipes that conveyed water to the monastery. When this reservoir was first constructed does not appear, we only know that it underwent a repair in the episcopate of bishop *Wainfleet*, about the year 1462.[4] Whether these pipes only conveyed the water to the Priory for common and culinary purposes, or

[1] It may not be amiss to mention here that various names of *tithings*, *farms*, *fields*, *woods*, &c. which appear in the ancient deeds, and evidences of several centuries standing, are still preserved in common use with little or no variation:—as *Norton*, *Southington*, *Durton*, *Achangre*, *Blackmore*, *Bradshot*, *Rood*, *Plestor*, &c. &c. At the same time it should be acknowledged that other places have entirely lost their original titles, as *le Buri* and *Trucstede* in this village; and *la Liega*, or *la Lyge*, which was the name of the original site of the Priory, &c.

[2] Men at first heaped sods, or fern, or heath, on their roofs to keep off the inclemencies of the weather: and then by degrees laid straw or haum. The first refinements on roofing were shingles, which are very ancient. Tiles are a very late and imperfect covering, and were not much in use till the beginning of the sixteenth century. The first tiled house *at Nottingham* was in 1503.

[3] There is also a *Butt-close* just at the back of the village.

[4] N. 381. "Clausure terre abbatie ecclesie parochiali de *Seleburne*, ix*s*. iiii*d*. "Reparacionibus domorum predicti prioratus iiii. *lib*. xi*s*. *Aque conduct*. ibidem, "xxiii*d*."

contributed to any matters of ornament and elegance, we shall not pretend to say; nor when artists and mechanics first understood any thing of *hydraulics*, and that water confined in tubes would rise to it's original level. There is a person now living who had been employed formerly in digging for these pipes, and once discovered several yards, which they sold for old lead.

There was also a plot of ground called *Tan-house garden:* and "*Tannaria sua*," a *tan-yard of their own*, has been mentioned in Letter XVI. This circumstance I just take notice of, as an instance that monasteries had trades and occupations carried on within themselves.[1]

Registr. B. pag. 112. Here we find a lease of the parsonage of *Selborne* to *Thomas Sylvester* and *Miles Arnold*, husbandmen—of the tythes of all manner of corne pertaining to the parsonage—with the offerings at the chapel of *Whaddon* belonging to the said parsonage. Dat. *June* 1. 27th. *Hen* 8th. [viz. 1536.]

As the chapel of *Whaddon* has never been mentioned till now, and as it is not noticed by bishop *Tanner* in his *Notitia Monastica*, some more particular account of it will be proper in this place. *Whaddon* was a chapel of ease to the mother church of *Selborne*, and was situated in the tithing of *Oakhanger*, at about two miles distance from the village. The farm and field whereon it stood are still called *chapel-farm* and *field*:[2] but there are no remains or traces of the building itself, the very foundations having been destroyed before the memory of man. In a farm yard at *Oakhanger* we remember a large hollow stone of a close substance, which had been used as a *hog-trough*, but was then broken. This stone, tradition said, had been the baptismal font of *Whaddon chapel*. The chapel had been in a very ruinous state in old days; but was new built at the instance of bishop *Wainfleet*, about the year 1463, during the *first* priorship of *Berne*, in consequence of a sequestration issued forth by that visitor against the Priory on account of notorious and shameful dilapidations.[3]

The *Selborne* rivulet becomes of some breadth at *Oakhanger*,

[1] There is still a wood near the Priory called *Tanner's wood*.

[2] This is a manor-farm, at present the property of *Lord Stawell;* and belonged probably in ancient times to *Jo.* de *Venur*, or *Venuz*, one of the first benefactors to the Priory.

[3] See Letter XIX. of these Antiquities.—"Summa total. solut. de novis edifica-"tionibus, et reparacionibus per idem tempus, ut patet per comput."

"Videlicet de nova edificat. *Capelle Marie* de *Wadden*. xiiii. *lib.* vs. viii*d*.—"Reparacionibus ecclesie Prioratus, cancellor. et capellar. ecclesiarum et capel-"larum de *Selborne*, et *Estworhlam*."—&c. &c.

and, in very wet seasons, swells to a large flood. There is a bridge over the stream at this hamlet of considerable antiquity and peculiar shape, known by the name of *Tunbridge:* it consists of one single blunt *gothic* arch, so high and sharp as to render the passage not very convenient or safe. Here was also, we find, a bridge in very early times; for *Jacobus de Hochangre,* the first benefactor to the Priory of *Selborne,* held his estate at *Hochangre* by the service of providing the king one foot-soldier for forty days, and by building this bridge. "*Jacobus de Hochangre* tenet *Hochangre* in com. *Southampton, per Serjantiam,*[1] inveniendi unum valectum in exercitu Domini regis [scil. *Henrici* III^tii.] per 40 dies; et ad faciendum *pontem* de *Hochangre:* et valet per ann. C. s." *Blount's Ancient Tenures,* p. 84.

A *dove-house* was a constant appendage to a manerial dwelling: of this convenience more will be said hereafter.

A *corn-mill* was also esteemed a necessary appendage of every manor; and therefore was to be expected of course at the Priory of *Selborne.*

The prior had *secta molendini,* or *ad molendinum:*[2] a power of compelling his vassels to bring their corn to be ground at his mill, according to old custom. He had also, according to bishop *Tanner, secta molendini de Strete:* but the purport of *Strete,* we must confess, we do not understand. *Strete,* in old English, signifies a road or highway, as *Watling Strete,* &c. therefore the prior might have some mill on a high road. The Priory had only one mill originally at *Selborne;* but, by grants of lands, it came possessed of one at *Durton,* and one at *Oakhanger,* and probably some on it's other several manors.[3] The mill at the Priory was in use within the memory of man, and the ruins of the mill-house were standing within these thirty years: the pond and dam, and miller's dwelling, still remain. As the stream was apt to fail in very dry summers, the tenants found their situation very distressing, for want of water, and so were forced to abandon the spot. This inconvenience was probably never felt in old times, when the whole district was nothing but woodlands: and yet several centuries ago there seem to have been two or three

[1] *Sargentia,* a sort of tenure of doing something for the king.

[2] "Servitium, quo feudatorii grana sua ad Domini molendinum, ibi molenda "perferre, ex consuetudine, astringuntur."

[3] *Thomas Knowles,* president, &c. ann. *Hen.* 8vi. xxiii.° [viz. 1532.] demised to *J. Whitelie* their mills, &c. for twenty years. Rent xxiiis. iiiid.—*Accepted Frewen,* president, &c. ann. *Caroli* xv. [viz. 1640.] demised to *Jo. Hook* and *Elizabeth,* his wife, the said mills. Rent as above.

mills between *Well-head* and the *Priory*. For the reason of this assertion, see Letter XXIX. to Mr. *Barrington*.

Occasional mention has been made of the many privileges and immunities enjoyed by the convent and it's priors; but a more particular state seems to be necessary. The author therefore thinks this the proper place, before he concludes these antiquities, to introduce all that has been collected by the judicious bishop *Tanner*, respecting the Priory and it's advantages, in his *Notitia Monastica*, a book now seldom seen, on account of the extravagance of it's price; and being but in few hands cannot be easily consulted.[1] He also adds a few of it's many privileges from other authorities:—the account is as follows. *Tanner*, page 166.

SELEBURNE.

A priory of *black canons*, founded by the often-mentioned *Peter de Rupibus*, bishop of *Winchester*, A.D. 1233, and dedicated to the blessed *Virgin Mary*: but was suppressed—and granted to *William Wainfleet*, bishop of *Winchester*, who made it part of the endowment of St. *Mary Magdalene College* in *Oxford*. The bishops of *Winchester* were patrons of it. [Pat. 17. *Edw.* II.] Vide in *Mon. Angl.* tom. II. p. 343. "Cartam fundationis ex ipso autographo "in archivis *Coll. Magd. Oxōn.* ubi etiam conservata sunt registra, "cartæ, rentalia et alia munimenta ad hunc prioratum spectantia.

"Extracta quædam e registro MSS. in Bibl. Bodl. *Dodsworth*, "vol. 89. f. 140."

"Cart. antiq. N. N. n. 33. P. P. n. 48. et 71. Q. Q. n. 40. plac. "coram justit. itin. [Southampton] 20 *Hen.* rot. 25. De eccl. de "*Basing, & Basingstoke.* Plac. de juratis apud *Winton.* 40 *Hen.* "III. rot.—Prosecta molendini de *Strete.* Cart. 54. *Hen.* III. m. "3. [*De mercatu, & feria apud Seleborne*, a mistake.] Pat. 9. *Edw.* I. "m.—Pat. 30. *Edw.* I m.—Pat. 33. *Edw.* I p. 1. m.—Pat. 35. *Edw.* "I. m.—Pat. 1. *Edw.* II. p. 1. m. 9. Pat. 5. *Edw.* II. p. 1. m. 21. "De terris in *Achanger.* Pat. 6. *Edw.* II. p. 1. m. 7. de eisdem. "Brev. in Scacc. 6. *Edw.* II. Pasch. rot. 8. Pat. 17. *Edw.* II. p. "1. m.—Cart. 10. *Edw.* III. n. 24. Quod terræ suæ in *Seleburn*, "*Achangre, Norton, Basings, Basingstoke*, and *Nately*, sint de affores-"tatæ, and pro aliis libertatibus. Pat. 12. *Edw.* III. p. 3. m. 3.— "Pat. 13. *Edw.* III. p. 1. m.—Cart. 18. *Edw.* III. n. 24."

[1] A few days after this was written a new edition of this valuable work was announced, in the month of *April* of the year 1787, as published by Mr. *Nasmith*.

"N. N. *33.* Rex concessit quod prior, et canonici de *Seleburn* "habeant per terras suas de *Seleburne, Achangre, Norton, Brompden,* "*Basinges, Basingstoke,* & *Nately,* diversas libertates.

"P. P. 48. Quod prior de *Seleburne,* habeat terras suas quietas "de vasto, et regardo."—*Extracts from Ayloffe's Calendars of* "*Ancient Charters.*

"Placita de juratis & assis coram *Salōm* de *Roff,* & sociis suis "justic. itiner. apud *Wynton* in comitatu *Sutht.*—anno regni R. "*Edvardi* filii reg. *Henr.* octavo.—Et *Por de Seleborn* ht in *Selebr.* "*fure. thurset. pillory, emendasse panis, & suis.*" [cerevisiæ.]—*Chapter-house, Westminster.*

"Placita Foreste apud *Wyntōn* in com. *Sutham.*—Anno reg. "*Edwardi* octavo coram Rog. de *Clifford.*—&c. Justic. ad eadem "placita audienda et minand. assigtis.

"Carta Pror de *Seleburn,* H. Dei gra. rex. angl. &c. Conces- "sim. prior. sce. *Marie* de *Seleburn.* et canonicis ibidem Deo "servient. — — — q ipi et oes hoies sui in pdcis terris suis et "tenementis manentes sint in ppetum quieti de sectis Swanemotor. "et omnium alior. placitor. for. et de *espeltamentis* canum. et de "omnibus submonitoibz. placitis querelis et exaccoibus et occoibz. "ad for. et for. et viridar. et eor. ministros ptinentibz."—

Chapter-house, Westminster.

"Plita Forestarum in com. *Sutht.* apud *Suthamton* — — anno "regni regis *Edwardi tcii* post conquestum quarto coram *Johe* "*Mantvers.* &c. justic. itinand. &c."

De hiis qui clamant libtates infra Forestas in com. *Sutht.*

"Prior de *Selebourne* clamat esse quietus erga dnm regem de "omnibus finibus et amerciamentis p tnsgr. et omnibus exac- "coibz ad Dom. regem vel hered. suos ptinent. pret. plita corone "reg.

"Item clamat q^d^ si aliquis hominum suorum de terris et ten. p. "delicto suo vitam aut membrum debeat amittere vel fugiat, & "judico stare noluerit vel aliud delictum fecit pro quo debeat "catella sua amittere, ubicunq; justitia fieri debeat omnia catella "illa sint ptci Prioris et successor. suor. Et liceat eidem priori et "ballis suis ponere se in seisinam in hujus modi catall. in casibus "pdcis sine disturbacone ballivor. dni reg. quorumcunque.

"Item clam. quod licet aliqua libtatum p dnm regem conces-

"sar. pcessu temporis quocunq; casu contingente usi non fuerint "nlominus postea eadm libtate uti possit. Et pdcus prior quesitus "p. justic. quo waranto clamat omn. terr. et ten. sua in *Seleburne*, "*Norton, Basynges, Basyngestoke, & Nattele,* que prior domus pdte "huit & tenuit X^mo^. die *April* anno regni dni *Hen.* reg. pavi dni "reg. nue XVIII. imppm esse quieta de vasto et regardo, et visu "forestarior. et viridarior. regardator. et omnium ministrorum "foreste," &c. &c. *Chapter-house, Westminster.*

LETTER XXVI.

THOUGH the evidences and documents of the Priory and parish of *Selborne* are now at an end, yet, as the author has still several things to say respecting the present state of that convent and it's *Grange,* and other matters, he does not see how he can acquit himself of the subject without trespassing again on the patience of the reader by adding one supplementary letter.

No sooner did the Priory (perhaps much out of repair at the time) become an appendage to the college, but it must at once have tended to swift decay. *Magdalen College* wanted now only two chambers for the chantry priest and his assistant; and therefore had no occasion for the hall, dormitory, and other spacious apartments belonging to so large a foundation. The roofs neglected, would soon become the possession of daws and owls; and, being rotted and decayed by the weather, would fall in upon the floors; so that all parts must have hastened to speedy dilapidation and a scene of broken ruins. Three full centuries have now passed since the dissolution; a series of years that would craze the stoutest edifices. But, besides the slow hand of time, many circumstances have contributed to level this venerable structure with the ground; of which nothing now remains but one piece of a wall of about ten feet long, and as many feet high, which probably was part of an out-house. As early as the latter end of the reign of *Hen.* VII. we find that a farm-house and two barns were built to the south of the Priory, and undoubtedly out of it's materials. Avarice again has much contributed to the overthrow of this stately pile, as long as the tenants could make money of it's stones or timbers. Wantonness, no doubt, has had a share in the demolition; for boys love to destroy what men venerate and admire. A remarkable instance of this propensity the writer can

give from his own knowledge. When a schoolboy, more than fifty years ago, he was eye-witness, perhaps a party concerned, in the undermining a portion of that fine old ruin at the north end of *Basingstoke* town, well known by the name of *Holy Ghost Chapel.* Very providentially the vast fragment, which these thoughtless little engineers endeavoured to sap, did not give way so soon as might have been expected; but it fell the night following, and with such violence that it shook the very ground, and, awakening the inhabitants of the neighbouring cottages, made them start up in their beds as if they had felt an earthquake. The motive for this dangerous attempt does not so readily appear: perhaps the more danger the more honour thought the boys; and the notion of doing some mischief gave a zest to the enterprize. As *Dryden* says upon an other occasion,

"It look'd so like a sin it pleas'd the more."

Had the Priory been only levelled to the surface of the ground, the discerning eye of an antiquary might have ascertained it's *ichnography,* and some judicious hand might have developed it's dimensions. But, besides other ravages, the very foundations have been torn up for the repair of the highways: so that the site of this convent is now become a rough, rugged pasture-field, full of hillocks and pits, choaked with nettles, and dwarf-elder, and trampled by the feet of the ox and the heifer.

As the tenant at the Priory was lately digging among the foundations, for materials to mend the highways, his labourers discovered two large stones, with which the farmer was so pleased that he ordered them to be taken out whole. One of these proved to be a large *Doric* capital, worked in good taste; and the other a base of a pillar; both formed out of the soft freestone of this district. These ornaments, from their dimensions, seem to have belonged to massive columns; and shew that the church of this *convent* was a large and costly edifice. They were found in the space which has always been supposed to have contained the south transept of the Priory church. Some fragments of large pilasters were also found at the same time. The diameter of the capital was two feet three inches and an half; and of the column, where it had stood on the base, eighteen inches and three quarters.

Two years ago some labourers digging again among the ruins found a sort of rude thick vase or urn of soft stone, containing about two gallons in measure, on the verge of the brook, in the

very spot which tradition has always pointed out as having been the site of the convent kitchen. This clumsy utensil,[1] whether intended for holy water, or whatever purpose, we were going to procure, but found that the labourers had just broken it in pieces, and carried it out on the highways.

The Priory of *Selborne* had possessed in this village a *Grange*, an usual appendage to manerial estates, where the fruits of their lands were stowed and laid up for use, at a time when men took the natural produce of their estates in kind. The mansion of this spot is still called the *Grange*, and is the manor-house of the convent possessions in this place. The author has conversed with very ancient people who remembered the old original *Grange;* but it has long given place to a modern farm-house. *Magdalen College* holds a court-leet and court-baron[2] in the great wheat-barn of the said *Grange*, annually, where the *President* usually superintends, attended by the *bursar* and *steward* of the college.[3]

The following uncommon presentment at the court is not unworthy of notice. There is on the south side of the king's field (a large common-field so called) a considerable tumulus, or hillock, now covered with thorns and bushes, and known by the name of *Kite's Hill*, which is presented, year by year, in court as not ploughed. Why this injunction is still kept up respecting this spot, which is surrounded on all sides by arable land, may be a question not easily solved, since the usage has long survived the knowledge of the intention thereof. We can only suppose that as the prior, besides *thurset* and *pillory*, had also *furcas*, a power of life and death, that he might have reserved this little eminence as the place of execution for delinquents. And there is the more reason to suppose so, since a spot just by is called *Gally* [Gallows] hill.

The lower part of the village next the *Grange*, in which is a pond and a stream, is well known by the name of *Gracious-street*, an appellation not at all understood. There is a lake in *Surrey*, near *Chobham*, called also *Gracious-pond:* and another, if

[1] A judicious antiquary, who saw this vase, observed, that it possibly might have been a standard *measure* between the monastery and it's tenants. The priory we have mentioned claimed the assize of bread and beer in *Selborne* manor: and probably the adjustment of dry measures for grain, &c.

[2] The time when this court is held is the mid-week between *Easter and Whitsuntide.*

[3] *Owen Oglethorp*, president, &c. an. *Edw. Sexti*, primo [viz. 1547.] demised to *Robert Arden Selborne Grange* for twenty years. Rent vi^{li}.—*Index of Leases.*

we mistake not, near *Hedleigh*, in the county of *Hants*. This strange denomination we do not at all comprehend, and conclude that it may be a corruption from some *Saxon* word, itself perhaps forgotten.

It has been observed already, that Bishop *Tanner* was mistaken when he refers to an evidence of *Dodsworth*, "*De mercatu et* FERIA *de Seleburne*". *Selborne* never had a chartered fair; the present fair was set up since the year 1681, by a set of jovial fellows, who had found in an old almanack that there had been a fair here in former days on the first of *August*; and were desirous to revive so joyous a festival. Against this innovation the vicar set his face, and persisted in crying it down, as the probable occasion of much intemperance. However the fair prevailed; but was altered to the twenty-ninth of *May*, because the former day often interfered with wheat-harvest. On that day it still continues to be held, and is become an useful mart for cows and calves. Most of the lower house-keepers brew beer against this holiday, which is dutied by the exciseman; and their becoming victuallers for the day without a license is overlooked.

Monasteries enjoyed all sorts of conveniences within themselves. Thus at the Priory, a low and moist situation, there were ponds and stews for their fish: at the same place also, and at the *Grange* in *Culver-croft*,[1] there were dove-houses; and on the hill opposite to the *Grange* the prior had a warren, as the names of *The Coney-crofts* and *Coney-croft Hanger* plainly testify.[2]

Nothing has been said as yet respecting the tenure or holding of the *Selborne* estates. *Temple* and *Norton* are manor farms and freehold; as is the manor of *Chapel* near *Oakhanger*, and also the estate at *Oakhanger-house* and *Black-moor*. The *Priory* and *Grange* are leasehold under *Magdalen-college*, for twenty-one years, renewable every seven: all the smaller estates in and round the village are copyhold of inheritance under the college, except the little remains of *Gurdon-manor*, which had been of old leased out upon lives, but have been freed of late by their present lord, as fast as those lives have dropped.

Selborne seems to have derived much of it's prosperity from the near neighbourhood of the Priory. For monasteries were of considerable advantage to places where they had their sites and estates, by causing great resort, by procuring markets and fairs,

[1] *Culver*, as has been observed before, is *Saxon* for a pigeon.
[2] A warren was an usual appendage to a manor.

by freeing them from the cruel oppression of forest-laws, and by letting their lands at easy rates. But, as soon as the convent was suppressed, the town which it had occasioned began to decline, and the market was less frequented; the rough and sequestered situation gave a check to resort, and the neglected roads rendered it less and less accessible.

That it had been a considerable place for size formerly appears from the largeness of the church, which much exceeds those of the neighbouring villages; by the ancient extent of the burying ground, which, from human bones occasionally dug up, is found to have been much encroached upon; by giving a name to the hundred; by the old foundations and ornamented stones, and tracery of windows that have been discovered on the north-east side of the village; and by the many vestiges of disused fish-ponds still to be seen around it. For ponds and stews were multiplied in the times of popery, that the affluent might enjoy some variety at their tables on fast days; therefore the more they abounded the better probably was the condition of the inhabitants.

[The Appendix (pp. 431-468 in orig.), giving in Latin a number of papers relating to the Priory of Selborne, is not reprinted here. Bell's and Buckland's editions contain an Appendix by the late Lord Selborne on the Romano-British Antiquities of Selborne.]

OBSERVATIONS

ON

VARIOUS PARTS OF NATURE.

FROM MR. WHITE'S MSS.[1]

[1] [The following passages were selected from Gilbert White's diaries by Dr. Aikin, and printed in the same volume with the Naturalist's Calendar (1795). In the edition of White's *Selborne*, published in 1802 and arranged by Dr. Aikin, Markwick's Calendar and Observations were added, and these have been commonly retained by later editors. They are of small value, and are not reprinted here; nor have we thought it necessary to include the Naturalist's Calendar, which White never saw and which he deliberately refrained from compiling for the History. See Letter LXVI. to Barrington.]

OBSERVATIONS ON BIRDS.

BIRDS IN GENERAL.

In severe weather fieldfares, red-wings, sky-larks, and tit-larks, resort to watered meadows for food; the latter wades up to its belly in pursuit of the pupæ of insects, and runs along upon the floating grass and weeds. Many gnats are on the snow near the water; these support the birds in part.

Birds are much influenced in their choice of food by colour, for though white currants are a much sweeter fruit than red, yet they seldom touch the former till they have devoured every bunch of the latter.

Red-starts, fly-catchers, and black-caps, arrive early in April. If these little delicate beings are birds of passage (as we have reason to suppose they are, because they are never seen in winter) how could they, feeble as they seem, bear up against such storms of snow and rain, and make their way through such meteorous turbulences, as one should suppose would embarrass and retard the most hardy and resolute of the winged nation? Yet they keep their appointed times and seasons; and in spite of frosts and winds return to their stations periodically, as if they had met with nothing to obstruct them. The withdrawing and appearance of the short-winged summer birds is a very puzzling circumstance in natural history!

When the boys bring me wasps' nests, my bantam fowls fare deliciously, and when the combs are pulled to pieces, devour the young wasps in their maggot state with the highest glee and delight. Any insect-eating bird would do the same; and therefore I have often wondered that the accurate Mr. Ray should call one species of buzzard *buteo apivorus sive vespivorus*, or the *honey-buzzard*, because some combs of wasps happened to be found in one of their nests. The combs were conveyed thither doubtless for the sake of the maggots or nymphs, and not for their honey: since

none is to be found in the combs of wasps. Birds of prey occasionally feed on insects; thus have I seen a tame kite picking up the female ants full of eggs with much satisfaction.

ROOKS.

Rooks are continually fighting and pulling each others' nests to pieces: these proceedings are inconsistent with living in such close community. And yet if a pair offers to build on a single tree, the nest is plundered and demolished at once. Some rooks roost on their nest-trees. The twigs which the rooks drop in building supply the poor with brushwood to light their fires. Some unhappy pairs are not permitted to finish any nest till the rest have completed their building. As soon as they get a few sticks together, a party comes and demolishes the whole. As soon as rooks have finished their nests, and before they lay, the cocks begin to feed the hens, who receive their bounty with a fondling tremulous voice and fluttering wings, and all the little blandishments that are expressed by the young, while in a helpless state. This gallant deportment of the males is continued through the whole season of incubation. These birds do not copulate on trees, nor in their nests, but on the ground in open fields.

THRUSHES.

Thrushes during long droughts are of great service in hunting out shell-snails, which they pull in pieces for their young, and are therefore very serviceable in gardens. Missel thrushes do not destroy the fruit in gardens like the other species of *turdi*, but feed on the berries of misseltoe, and in the spring on ivy berries, which then begin to ripen. In the summer, when their young become fledged, they leave neighbourhoods, and retire to sheep walks and wild commons.

The magpies, when they have young, destroy the broods of missel thrushes, though the dams are fierce birds, and fight boldly in defence of their nests. It is probably to avoid such insults, that this species of thrush, though wild at other times, delights to build near houses, and in frequented walks and gardens.

POULTRY.

Many creatures are endowed with a ready discernment to see what will turn to their own advantage and emolument; and often discover more sagacity than could be expected. Thus my neighbour's poultry watch for waggons loaded with wheat, and running after them pick up a number of grains which are shaken from the sheaves by the agitation of the carriages. Thus, when my brother used to take down his gun to shoot sparrows, his cats would run out before him, to be ready to catch up the birds as they fell.

The earnest and early propensity of the *gallinæ* to roost on high is very observable; and discovers a strong dread impressed on their spirits respecting vermin that may annoy them on the ground during the hours of darkness. Hence poultry, if left to themselves and not housed, will perch the winter through on yew-trees and fir-trees; and turkies and guinea-fowls, heavy as they are, get up into apple trees; pheasants also in woods sleep on trees to avoid foxes; while pea-fowls climb to the tops of the highest trees round their owner's house for security, let the weather be ever so cold or blowing. Partridges, it is true, roost on the ground, not having the faculty of perching; but then the same fear prevails in their minds; for through apprehensions from polecats and stoats, they never trust themselves to coverts, but nestle together in the midst of large fields, far removed from hedges and coppices, which they love to haunt in the day, and where at that season they can sculk more secure from the ravages of rapacious birds.

As to ducks and geese, their awkward, splay web-feet forbid them to settle on trees; they therefore, in the hours of darkness and danger, betake themselves to their own element, the water, where, amidst large lakes and pools, like ships riding at anchor, they float the whole night long in peace and security.

HEN PARTRIDGE.

A hen-partridge came out of a ditch, and ran along shivering with her wings, and crying out as if wounded, and unable to get from us. While the dam acted this distress, the boy who attended me saw her brood, that was small and unable to fly, run for shelter into an old fox-earth under the bank. So wonderful a power is instinct!

A HYBRID PHEASANT.

Lord Stawell sent me from the great lodge in the Holt a curious bird for my inspection. It was found by the spaniels of one of his keepers in a coppice, and shot on the wing. The shape, air, and habit of the bird, and the scarlet ring round the eyes, agreed well with the appearance of a cock-pheasant: but then the head and neck, and breast and belly were of a glossy black: and though it weighed three pounds three ounces and a half,[1] the weight of a large full-grown cock-pheasant, yet there were no signs of any spurs on the legs, as is usual with all grown cock-pheasants, who have long ones. The legs and feet were naked of feathers, and therefore it could be nothing of the grous kind. In the tail were no long bending feathers, such as cock-pheasants usually have, and are characteristic of the sex. The tail was much shorter than the tail of a hen-pheasant, and blunt and square at the end. The back, wing feathers, and tail, were all of a pale russet curiously streaked, somewhat like the upper parts of a hen-partridge. I returned it with my verdict, that it was probably a spurious or hybrid hen-bird, bred between a cock-pheasant and some domestic fowl. When I came to talk with the keeper who brought it, he told me that some pea-hens had been known last summer to haunt the coppices and coverts where this mule was found.

Mr. Elmer, of Farnham, the famous game painter, was employed to take an exact copy of this curious bird.

N. B. It ought to be mentioned, that some good judges have imagined this bird to have been a stray grous or black-cock; it is however to be observed, that Mr. W. remarks, that its legs and feet were naked, whereas those of the grous are feathered to the toes.[2]

LAND-RAIL.

A man brought me a land-rail or daker-hen, a bird so rare in this district that we seldom see more than one or two in a season, and those only in autumn. This is deemed a bird of passage by

[1] Hen pheasants usually weigh only two pounds ten ounces.

[2] [There can now be no doubt that this bird was a hybrid between the black-cock and the pheasant. The coloured engraving in some of the early editions gives a very erroneous idea of the bird, and is a wretched copy from Elmer's clever painting, mentioned by Gilbert White, which was given to him by Lord Stawell, and has been for many years in my possession.—*Bell.*]

all the writers: yet from its formation seems to be poorly qualified for migration; for its wings are short, and placed so forward, and out of the centre of gravity, that it flies in a very heavy and embarrassed manner, with its legs hanging down; and can hardly be sprung a second time, as it runs very fast, and seems to depend more on the swiftness of its feet than on its flying.

When we came to draw it, we found the entrails so soft and tender, that in appearance they might have been dressed like the ropes of a woodcock. The craw or crop was small and lank, containing a mucus; the gizzard thick and strong, and filled with small shell-snails, some whole, and many ground to pieces through the attrition which is occasioned by the muscular force and motion of that intestine. We saw no gravels among the food: perhaps the shell-snails might perform the functions of gravels or pebbles, and might grind one another. Land-rails used to abound formerly, I remember, in the low, wet bean-fields of Christian Malford in North Wilts, and in the meadows near Paradise Gardens at Oxford, where I have often heard them cry *crex, crex.* The bird mentioned above weighed 7½ oz., was fat and tender, and in flavour like the flesh of a woodcock. The liver was very large and delicate.

FOOD OF THE RING-DOVE.

One of my neighbours shot a ring-dove on an evening as it was returning from feed and going to roost. When his wife had picked and drawn it, she found its craw stuffed with the most nice and tender tops of turnips. These she washed and boiled, and so sat down to a choice and delicate plate of greens, culled and provided in this extraordinary manner.

Hence we may see that graminivorous birds, when grain fails, can subsist on the leaves of vegetables. There is reason to suppose that they would not long be healthy without; for turkies, though corn-fed, delight in a variety of plants, such as cabbage, lettuce, endive, &c. and poultry pick much grass; while geese live for months together on commons by grazing alone.

"Nought is useless made; — — —
"— — — — On the barren heath
"The shepherd tends his flock that daily crop
"Their verdant dinner from the mossy turf
"Sufficient: after them the cackling *goose*,
"Close-grazer, finds wherewith to ease her want."

PHILIPS'S CYDER.

HEN HARRIER.

Mr. White of Newton sprung a pheasant in a wheat stubble, and shot at it; when, notwithstanding the report of the gun, it was immediately pursued by the blue hawk, known by the name of the hen-harrier, but escaped into some covert. He then sprung a second, and a third, in the same field, that got away in the same manner; the hawk hovering round him all the while that he was beating the field, conscious no doubt of the game that lurked in the stubble.[1] Hence we may conclude that this bird of prey was rendered very daring and bold by hunger, and that hawks cannot always seize their game when they please. We may farther observe, that they cannot pounce their quarry on the ground, where it might be able to make a stout resistance, since so large a fowl as a pheasant could not but be visible to the piercing eye of a hawk, when hovering over the field. Hence that propensity of cowring and squatting till they are almost trod on, which no doubt was intended as a mode of security: though long rendered destructive to the whole race of *gallinæ* by the invention of nets and guns.

GREAT SPECKLED DIVER, OR LOON.

As one of my neighbours was traversing Wolmer forest from Bramshot across the moors, he found a large uncommon bird fluttering in the heath, but not wounded, which he brought home alive. On examination it proved to be *colymbus glacialis Linn.* the great speckled diver or loon, which is most excellently described in Willughby's Ornithology.

Every part and proportion of this bird is so incomparably adapted to its mode of life, that in no instance do we see the wisdom of God in the creation to more advantage. The head is sharp, and smaller than the part of the neck adjoining, in order that it may pierce the water; the wings are placed forward and out of the center of gravity for a purpose which shall be noticed hereafter; the thighs quite at the podex, in order to facilitate

[1] ["I think White must have been misinformed as to the species of Hawk which performed this feat. Its actions as described are exactly those of a Falcon, and do not agree with any thing that has been observed in a Harrier; so that I have little doubt that the 'blue hawk' was an adult Peregrine Falcon."—*Newton*, in Bell's edition.]

diving; and the legs are flat, and as sharp backwards almost as the edge of a knife, that in striking they may easily cut the water: while the feet are palmated, and broad for swimming, yet so folded up when advanced forward to take a fresh stroke, as to be full as narrow as the shank. The two exterior toes of the feet are longest; the nails flat and broad, resembling the human, which give strength and increase the power of swimming. The foot, when expanded, is not at right angles to the leg or body of the bird: but the exterior part, inclining towards the head, forms an acute angle with the body; the intention being not to give motion in the line of the legs themselves, but by the combined impulse of both in an intermediate line, the line of the body.

Most people know, that have observed at all, that the swimming of birds is nothing more than a walking in the water, where one foot succeeds the other as on the land; yet no one, as far as I am aware, has remarked that diving fowls, while under water, impel and row themselves forward by a motion of their wings, as well as by the impulse of their feet: but such is really the case, as any person may easily be convinced, who will observe ducks when hunted by dogs in a clear pond. Nor do I know that any one has given a reason why the wings of diving fowls are placed so forward: doubtless, not for the purpose of promoting their speed in flying, since that position certainly impedes it; but probably for the increase of their motion under water, by the use of four oars instead of two; yet were the wings and feet nearer together, as in land-birds, they would, when in action, rather hinder than assist one another.

This *colymbus* was of considerable bulk, weighing only three drachms short of three pounds avoirdupois. It measured in length from the bill to the tail (which was very short) two feet, and to the extremities of the toes, four inches more; and the breadth of the wings expanded was 42 inches. A person attempted to eat the body, but found it very strong and rancid, as is the flesh of all birds living on fish. Divers or loons, though bred in the most northerly parts of Europe, yet are seen with us in very severe winters; and on the Thames are called *sprat loons*, because they prey much on that sort of fish.

The legs of the *colymbi* and *mergi* are placed so very backward, and so out of all center of gravity, that these birds cannot walk at all. They are called by Linnæus *compedes*, because they move on the ground as if shackled or fettered.

STONE CURLEW.

On the 27th of February 1788, stone curlews were heard to pipe; and on March 1st, after it was dark, some were passing over the village, as might be perceived by their quick, short note, which they use in their nocturnal excursions by way of watch-word, that they may not stray and lose their companions.

Thus, we see, that retire whithersoever they may in the winter, they return again early in the spring, and are, as it now appears, the first summer birds that come back. Perhaps the mildness of the season may have quickened the emigration of the curlews this year.

They spend the day in high, elevated fields and sheep-walks; but seem to descend in the night to streams and meadows, perhaps for water, which their upland haunts do not afford them.

THE SMALLEST WILLOW-WREN.

The smallest uncrested or willow-wren, or chiff-chaff, is the next early summer bird which we have remarked; it utters two sharp piercing notes, so loud in hollow woods, as to occasion an echo, and is usually first heard about the 20th of March.

FERN-OWL, OR GOATSUCKER.

The country people have a notion that the fern-owl, or churn-owl, or eve-jarr, which they also call a puckeridge, is very injurious to weanling calves, by inflicting, as it strikes at them, the fatal distemper known to cow-leeches by the name of *puckeridge*. Thus does this harmless ill-fated bird fall under a double imputation which it by no means deserves—in Italy, of sucking the teats of goats, whence it is called *caprimulgus;* and with us, of communicating a deadly disorder to cattle. But the truth of the matter is, the malady above mentioned is occasioned by the *œstrus bovis*, a dipterous insect, which lays its eggs along the chines of kine, where the maggots, when hatched, eat their way through the hide of the beast into the flesh, and grow to a very large size. I have just talked with a man, who says, he has more than once stripped calves who have died of the puckeridge; that

the ail or complaint lay along the chine, where the flesh was much swelled, and filled with purulent matter. Once I myself saw a large rough maggot of this sort squeezed out of the back of a cow.

These maggots in Essex are called *wornils.*

The least observation and attention would convince men, that these birds neither injure the goatherd nor the grazier, but are perfectly harmless, and subsist alone, being night-birds, on night-insects, such as *scarabæi* and *phalænæ;* and through the month of July mostly on the *scarabæus solstitialis,* which in many districts abounds at that season. Those that we have opened, have always had their craws stuffed with large night-moths and their eggs, and pieces of chaffers: nor does it anywise appear how they can, weak and unarmed as they seem, inflict any harm upon kine, unless they possess the powers of animal magnetism, and can affect them by fluttering over them.

A fern-owl, this evening (August 27) showed off in a very unusual and entertaining manner, by hawking round and round the circumference of my great spreading oak for twenty times following, keeping mostly close to the grass, but occasionally glancing up amidst the boughs of the tree. This amusing bird was then in pursuit of a brood of some particular *phalæna* belonging to the oak, of which there are several sorts; and exhibited on the occasion a command of wing superior, I think, to that of the swallow itself.

When a person approaches the haunt of fern-owls in an evening, they continue flying round the head of the obtruder; and by striking their wings together above their backs, in the manner that the pigeons called *smiters* are known to do, make a smart snap: perhaps at that time they are jealous for their young; and their noise and gesture are intended by way of menace.

Fern-owls have attachment to oaks, no doubt on account of food; for the next evening we saw one again several times among the boughs of the same tree; but it did not skim round its stem over the grass, as on the evening before. In May these birds find the *scarabæus melolontha* on the oak; and the *scarabæus solstitialis* at midsummer. These peculiar birds can only be watched and observed for two hours in the twenty-four: and then in a dubious twilight an hour after sun-set and an hour before sun-rise.

On this day (July 14, 1789) a woman brought me two eggs of a fern-owl or eve-jarr, which she found on the verge of the

Hanger, to the left of the hermitage, under a beechen shrub. This person, who lives just at the foot of the Hanger, seems well acquainted with these nocturnal swallows, and says she has often found their eggs near that place, and that they lay only two at a time on the bare ground. The eggs were oblong, dusky, and streaked somewhat in the manner of the plumage of the parent-bird, and were equal in size at each end. The dam was sitting on the eggs when found, which contained the rudiments of young, and would have been hatched perhaps in a week. From hence we may see the time of their breeding, which corresponds pretty well with that of the swift, as does also the period of their arrival. Each species is usually seen about the beginning of May. Each breeds but once in a summer; each lays only two eggs.

July 4, 1790. The woman who brought me two fern-owl's eggs last year on July 14, on this day produced me two more, one of which had been laid this morning, as appears plainly, because there was only one in the nest the evening before. They were found, as last July, on the verge of the down above the hermitage, under a beechen shrub, on the naked ground. Last year those eggs were full of young, and just ready to be hatched.

These circumstances point out the exact time when these curious, nocturnal, migratory birds lay their eggs and hatch their young. Fern-owls, like snipes, stone-curlews, and some other birds, make no nest. Birds that build on the ground do not make much of nests.

SAND-MARTINS.

March 23, 1788. A gentleman, who was this week on a visit at Waverley, took the opportunity of examining some of the holes in the sand-banks with which that district abounds. As these are undoubtedly bored by bank-martins, and are the places where they avowedly breed, he was in hopes they might have slept there also, and that he might have surprised them just as they were awaking from their winter slumbers. When he had dug for some time, he found the holes were horizontal and serpentine, as I had observed before: and that the nests were deposited at the inner end, and had been occupied by broods in former summers, but no torpid birds were to be found. He opened and examined about a dozen holes. Another gentleman made the same search many years ago, with as little success.

These holes were in depth about two feet.

March 21, 1790. A single bank or sand martin was seen hovering and playing round the sand-pit at Short Heath, where in the summer they abound.

April 9, 1793. A sober hind assures us, that this day, on Wish-hanger common, between Hedleigh and Frinsham, he saw several bank-martins playing in and out, and hanging before some nest holes in a sand-hill, where these birds usually nestle.

This incident confirms my suspicions that this species of *hirundo* is to be seen first of any; and gives great reason to suppose that they do not leave their wild haunts at all, but are secreted amidst the clefts and caverns of those abrupt cliffs, where they usually spend their summers.

The late severe weather considered, it is not very probable that these birds should have migrated so early from a tropical region, through all these cutting winds and pinching frosts: but it is easy to suppose that they may, like bats and flies, have been awakened by the influence of the sun, amidst their secret *latebræ*, where they have spent the uncomfortable, foodless months in a torpid state, and the profoundest of slumbers.

There is a large pond at Wish-hanger, which induces these sand-martins to frequent that district. For I have ever remarked that they haunt near great waters, either rivers or lakes.

SWALLOWS, CONGREGATING AND DISAPPEARANCE OF.

During the severe winds that often prevail late in the spring, it is not easy to say how the *hirundines* subsist: for they withdraw themselves, and are hardly ever seen, nor do any insects appear for their support. That they can retire to rest, and sleep away these uncomfortable periods, as the bats do, is a matter rather to be suspected than proved: or do they not rather spend their time in deep and sheltered vales near waters, where insects are more likely to be found? Certain it is, that hardly any individuals of this genus have at such times been seen for several days together.

September 13, 1791. The congregating flocks of *hirundines* on the church and tower are very beautiful and amusing! When they fly off all together from the roof, on any alarm, they quite swarm in the air. But they soon settle in heaps, and preening their feathers, and lifting up their wings to admit the sun, seem highly to enjoy the warm situation. Thus they spend the heat of the

day, preparing for their emigration, and, as it were, consulting when and where they are to go. The flight about the church seems to consist chiefly of house-martins, about 400 in number: but there are other places of rendezvous about the village frequented at the same time.

It is remarkable, that though most of them sit on the battlements and roof, yet many hang or cling for some time by their claws against the surface of the walls, in a manner not practised by them at any other time of their remaining with us.

The swallows seem to delight more in holding their assemblies on trees.

November 3, 1789. Two swallows were seen this morning at Newton vicarage-house, hovering and settling on the roofs and out-buildings. None have been observed at Selborne since October 11. It is very remarkable, that after the *hirundines* have disappeared for some weeks, a few are occasionally seen again: sometimes, in the first week in November, and that only for one day. Do they not withdraw and slumber in some hiding-place during the interval? for we cannot suppose they had migrated to warmer climes, and so returned again for one day. Is it not more probable that they are awakened from sleep, and like the bats are come forth to collect a little food? Bats appear at all seasons through the autumn and spring months, when the thermometer is at 50, because then *phalænæ* and moths are stirring.

These swallows looked like young ones.

WAGTAILS.

While the cows are feeding in moist low pastures, broods of wagtails, white and grey, run round them, close up to their noses, and under their very bellies, availing themselves of the flies that settle on their legs, and probably finding worms and *larvæ* that are roused by the trampling of their feet. Nature is such an œconomist, that the most incongruous animals can avail themselves of each other! Interest makes strange friendships.

WRYNECK.

These birds appear on the grass-plots and walks; they walk a little as well as hop, and thrust their bills into the turf, in quest,

I conclude, of ants, which are their food. While they hold their bills in the grass, they draw out their prey with their tongues, which are so long as to be coiled round their heads.

GROSBEAK.

Mr. B. shot a cock-grosbeak which he had observed to haunt his garden for more than a fortnight. I began to accuse this bird of making sad havock among the buds of the cherries, gooseberries, and wall-fruit of all the neighbouring orchards. Upon opening its crop or craw, no buds were to be seen; but a mass of kernels of the stones of fruits. Mr. B. observed that this bird frequented the spot where plum-trees grow; and that he had seen it with somewhat hard in its mouth, which it broke with difficulty; these were the stones of damsons. The latin ornithologists call this bird *coccothraustes*, i. e. berry-breaker, because with its large horny beak it cracks and breaks the shells of stone-fruits for the sake of the seed or kernel. Birds of this sort are rarely seen in England, and only in winter.[1]

OBSERVATIONS ON QUADRUPEDS.

SHEEP.

The sheep on the downs this winter (1769) are very ragged, and their coats much torn; the shepherds say they tear their fleeces with their own mouths and horns, and they are always in that way in mild wet winters, being teased and tickled with a kind of lice.

After ewes and lambs are shorn, there is great confusion and bleating, neither the dams nor the young being able to distinguish one another as before. This embarrassment seems not so much to arise from the loss of the fleece, which may occasion an alteration in their appearance, as from the defect of that *notus odor*, discriminating each individual personally; which also is confounded by the strong scent of the pitch and tar wherewith they

[1] ["Of late years this species has become much commoner in England, nesting now in many counties where formerly it was chiefly observed as a winter visitant." —*Harting.*]

are newly marked; for the brute creation recognize each other more from the smell than the sight; and in matters of identity and diversity appeal much more to their noses than to their eyes. After sheep have been washed there is the same confusion, from the reason given above.

RABBITS.

Rabbits make incomparably the finest turf, for they not only bite closer than larger quadrupeds, but they allow no bents to rise; hence warrens produce much the most delicate turf for gardens. Sheep never touch the stalks of grasses.

CAT AND SQUIRRELS.

A boy has taken three little young squirrels in their nest, or *drey* as it is called in these parts. These small creatures he put under the care of a cat who had lately lost her kittens, and finds that she nurses and suckles them with the same assiduity and affection, as if they were her own offspring. This circumstance corroborates my suspicion, that the mention of exposed and deserted children being nurtured by female beasts of prey who had lost their young, may not be so improbable an incident as many have supposed; and therefore may be a justification of those authors who have gravely mentioned, what some have deemed to be a wild and improbable story.

So many people went to see the little squirrels suckled by a cat, that the foster-mother became jealous of her charge, and in pain for their safety; and therefore hid them over the ceiling, where one died. This circumstance shews her affection for these foundlings, and that she supposes the squirrels to be her own young. Thus hens, when they have hatched ducklings, are equally attached to them as if they were their own chickens.

HORSE.

An old hunting mare, which ran on the common, being taken very ill, ran down into the village, as it were to implore the help of men, and died the night following in the street.

HOUNDS.

The king's stag-hounds came down to Alton, attended by a huntsman and six yeoman prickers, with horns, to try for the stag that has haunted Hartley Wood and its environs for so long a time. Many hundreds of people, horse and foot, attended the dogs to see the deer unharboured; but though the huntsmen drew Hartley Wood, and Long Coppice, and Shrubwood, and Temple Hangers, and in their way back Hartley and Ward le ham Hangers, yet no stag could be found.

The royal pack, accustomed to have the deer turned out before them, never drew the coverts with any address and spirit, as many people that were present observed; and this remark the event has proved to be a true one. For as a person was lately pursuing a pheasant that was wing-broken in Hartley Wood, he stumbled upon the stag by accident, and ran in upon him as he lay concealed amidst a thick brake of brambles and bushes.

OBSERVATIONS ON INSECTS AND VERMES.

INSECTS IN GENERAL.

The day and night insects occupy the annuals alternately: the *papilios*, *muscæ*, and *apes*, are succeeded at the close of day by *phalænæ*, earwigs, woodlice, &c. In the dusk of the evening, when beetles begin to buz, partridges begin to call; these two circumstances are exactly coincident.

Ivy is the last flower that supports the hymenopterous and dipterous insects. On sunny days quite on to November they swarm on trees covered with this plant; and when they disappear, probably retire under the shelter of its leaves, concealing themselves between its fibres and the trees which it entwines.

Spiders, woodlice, *lepismæ* in cupboards and among sugar, some *empedes*, gnats, flies of several species, some *phalænæ* in hedges, earth-worms, &c. are stirring at all times when winters are mild; and are of great service to those soft-billed birds that never leave us.

On every sunny day the winter through, clouds of insects usually called gnats (I suppose *tipulæ* and *empedes*) appear sporting and dancing over the tops of the ever-green trees in

the shrubbery, and frisking about as if the business of generation was still going on. Hence it appears that these diptera (which by their sizes appear to be of different species) are not subject to a torpid state in the winter, as most winged insects are. At night, and in frosty weather, and when it rains and blows, they seem to retire into those trees. They often are out in a fog.

HUMMING IN THE AIR.

There is a natural occurrence to be met with upon the highest part of our down in hot summer days, which always amuses me much, without giving me any satisfaction with respect to the cause of it; and that is a loud audible humming of bees in the air, though not one insect is to be seen. This sound is to be heard distinctly the whole common through, from the Money-dells, to Mr. White's avenue-gate. Any person would suppose that a large swarm of bees was in motion, and playing about over his head. This noise was heard last week, on June 28th.

"Resounds the living surface of the ground,
"Nor undelightful is the ceaseless *hum*
"To him who muses ———— at noon."
"Thick in yon stream of light a thousand ways,
"Upward and downward, thwarting and convolv'd,
"The quivering nations sport." THOMSON'S SEASONS.

CHAFFERS.

Cockchaffers seldom abound oftener than once in three or four years; when they swarm, they deface the trees and hedges. Whole woods of oaks are stripped bare by them.

Chaffers are eaten by the turkey, the rook, and the house-sparrow.

The *scarabæus* [*Rhizotrogus*] *solstitialis* first appears about June 26: they are very punctual in their coming out every year. They are a small species, about half the size of the May-chaffer, and are known in some parts by the name of the fern-chaffer.

PTINUS PECTINICORNIS.

Those maggots that make worm-holes in tables, chairs, bed-posts, &c. and destroy wooden furniture, especially where there is

any sap, are the larvæ of the *ptinus pectinicornis.* This insect, it is probable, deposits its eggs on the surface, and the worms eat their way in.

In their holes they turn into their pupæ state, and so come forth winged in July: eating their way through the valances or curtains of a bed, or any other furniture that happens to obstruct their passage.

They seem to be most inclined to breed in beech; hence beech will not make lasting utensils, or furniture. If their eggs are deposited on the surface, frequent rubbings will preserve wooden furniture.[1]

BLATTA ORIENTALIS.—COCKROACH.

A neighbour complained to me that her house was over-run with a kind of black beetle, or as she expressed herself, with a kind of black-bob, which swarmed in her kitchen when they got up in a morning before day-break.

Soon after this account, I observed an unusual insect in one of my dark chimney-closets, and find since, that in the night they swarm also in my kitchen. On examination, I soon ascertained the species to be the *blatta orientalis* of Linnæus, and the *blatta molendinaria* of Mouffet. The male is winged; the female is not, but shows somewhat like the rudiments of wings, as if in the pupa state.

These insects belonged originally to the warmer parts of America, and were conveyed from thence by shipping to the East Indies; and by means of commerce begin to prevail in the more northern parts of Europe, as Russia, Sweden, &c. How long they have abounded in England I cannot say; but have never observed them in my house till lately.

They love warmth, and haunt chimney-closets, and the backs of ovens. Poda says that these and house-crickets will not associate together; but he is mistaken in that assertion, as Linnæus suspected he was. They are altogether night insects, *lucifugæ,* never coming forth till the rooms are dark and still, and

[1] [Our commonest wood-boring larvæ are *Xestobium tesselatum*, F., and *Anobium domesticum*, Fourc., the death-watches of superstition. *Ptinus* (*Ptilinus*) *pectinicornis* is found chiefly in old trees and posts, but also in old furniture as White says. The mischief is done by the larvæ; the perfect insect only lives for a short time. A closely allied beetle (*Anobium paniceum*) is the "weevil" which devours biscuits on shipboard.]

escaping away nimbly at the approach of a candle. Their antennæ are remarkably long, slender, and flexile.

October, 1790. After the servants are gone to bed, the kitchen-hearth swarms with young crickets, and young *blattæ molendinariæ* of all sizes, from the most minute growth to their full proportions. They seem to live in a friendly manner together, and not to prey the one on the other.

August, 1792. After the destruction of many thousands of *blattæ molendinariæ*, we find that at intervals a fresh detachment of old ones arrives, and particularly during this hot season: for the windows being left open in the evenings, the males come flying in at the casements from the neighbouring houses, which swarm with them. How the females, that seem to have no perfect wings that they can use, can contrive to get from house to house, does not so readily appear. These, like many insects, when they find their present abodes over-stocked, have powers of migrating to fresh quarters. Since the *blattæ* have been so much kept under, the crickets have greatly increased in number.[1]

GRYLLUS DOMESTICUS.—HOUSE CRICKET.

November. After the servants are gone to bed, the kitchen-hearth swarms with minute crickets not so large as fleas, which must have been lately hatched. So that these domestic insects, cherished by the influence of a constant large fire, regard not the season of the year, but produce their young at a time when their congeners are either dead, or laid up for the winter, to pass away the uncomfortable months in the profoundest slumbers, and a state of torpidity.

When house-crickets are out, and running about in a room in the night, if surprised by a candle, they give two or three shrill notes, as it were for a signal to their fellows, that they may escape to their crannies and lurking holes, to avoid danger.

[1] [It is to be noticed that the cockroach was an unfamiliar insect in English villages a little more than a hundred years ago. White's mistaken belief that *Blatta* (*Periplaneta*) *orientalis* is native to America was derived from Linnæus ("Habitat in America: hospitatur in Oriente."—*Syst. Nat.*).]

CIMEX [RANATRA] LINEARIS.

August 12, 1775. *Cimices lineares* are now in high copulation on ponds and pools. The females, who vastly exceed the males in bulk, dart and shoot along on the surface of the water with the males on their backs. When a female chooses to be disengaged, she rears, and jumps, and plunges, like an unruly colt; the lover thus dismounted, soon finds a new mate. The females, as fast as their curiosities are satisfied, retire to another part of the lake, perhaps to deposit their fœtus in quiet; hence the sexes are found separate, except where generation is going on. From the multitude of minute young of all gradations of sizes, these insects seem without doubt to be viviparous.

PHALÆNA QUERCUS.

Most of our oaks are naked of leaves, and even the Holt in general, having been ravaged by the caterpillars of a small *phalæna*, which is of a pale yellow colour. These insects, though a feeble race, yet, from their infinite numbers, are of wonderful effect, being able to destroy the foliage of whole forests and districts. At this season they leave their *aureliæ*, and issue forth in their fly-state, swarming and covering the trees and hedges.

In a field at Greatham, I saw a flight of swifts busied in catching their prey near the ground; and found they were hawking after these *phalænæ*. The *aurelia* of this moth is shining and as black as jet; and lies wrapped up in a leaf of the tree, which is rolled round it, and secured at the ends by a web, to prevent the maggot from falling out.[1]

EPHEMERA CAUDA BISETA.—MAY FLY.

June 10, 1771. Myriads of May flies appear for the first time on the Alresford stream. The air was crowded with them, and the surface of the water covered. Large trouts sucked them in as they lay struggling on the surface of the stream, unable to rise till their wings were dried.

[1] [This is the *Tortrix* of the oak (*Tortrix viridana*). Réaumur has described in interesting detail the method by which the larva forms its shelter (*Hist. des Insectes*, tom. ii, Mém. v).]

This appearance reconciled me in some measure to the wonderful account that Scopoli gives of the quantities emerging from the rivers of Carniola. Their motions are very peculiar, up and down for many yards almost in a perpendicular line.

SPHYNX OCELLATA.[1]

A vast insect appears after it is dusk, flying with a humming noise, and inserting its tongue into the bloom of the honeysuckle; it scarcely settles upon the plants, but feeds on the wing in the manner of humming birds.

WILD BEE.

There is a sort of wild bee frequenting the garden-campion for the sake of its tomentum, which probably it turns to some purpose in the business of nidification. It is very pleasant to see with what address it strips off the pubes, running from the top to the bottom of a branch, and shaving it bare with all the dexterity of a hoop-shaver. When it has got a vast bundle, almost as large as itself, it flies away, holding it secure between its chin and its fore legs.[2]

There is a remarkable hill on the downs near Lewes in Sussex, known by the name of Mount Carburn [Caburn], which overlooks that town, and affords a most engaging prospect of all the country round, besides several views of the sea. On the very summit of this exalted promontory, and amidst the trenches of its Danish camp, there haunts a species of wild bee, [*Anthophora acervorum*,] making its nest in the chalky soil. When people approach the place, these insects begin to be alarmed, and, with a sharp and hostile sound, dash and strike round the heads and faces of intruders. I have often been interrupted myself while contemplating the grandeur of the scenery around me, and have thought myself in danger of being stung.

[1] [The eyed hawk-moth (*Smerinthus ocellatus*, L.). The habits of the moth described by White are those of the humming-bird hawk-moth (*Macroglossa stellatarum*, L.).]

[2] [*Anthidium manicatum*, the Carder bee. This bee lines its nest with the down. Fabre gives an account of the habits of several French species of *Anthidium* in his *Souvenirs Entomologiques*, tom. iv., p. 119.]

WASPS.

Wasps abound in woody wild districts far from neighbourhoods; they feed on flowers, and catch flies and caterpillars to carry to their young. Wasps make their nests with the raspings of sound timber; hornets, with what they gnaw from decayed: these particles of wood are kneaded up with a mixture of saliva from their bodies, and moulded into combs.

When there is no fruit in the gardens, wasps eat flies, and suck the honey from flowers, from ivy blossoms, and umbellated plants: they carry off also flesh from butchers' shambles.

ŒSTRUS CURVICAUDA.[1]

This insect lays its nits or eggs on horses' legs, flanks, &c. each on a single hair. The maggots when hatched do not enter the horses' skins, but fall to the ground. It seems to abound most in moist, moorish places, though sometimes seen in the uplands.

NOSE FLY.[2]

About the beginning of July, a species of fly (*musca*) obtains, which proves very tormenting to horses, trying still to enter their nostrils and ears, and actually laying their eggs in the latter of those organs, or perhaps in both. When these abound, horses in woodland districts become very impatient at their work, continually tossing their heads, and rubbing their noses on each other, regardless of the driver, so that accidents often ensue. In the heat of the day, men are often obliged to desist from ploughing. Saddle-horses are also very troublesome at such seasons. Country people call this insect the nose fly.

ICHNEUMON FLY.

I saw lately a small ichneumon fly attack a spider much larger than itself on a grass walk. When the spider made any resistance,

[1] [The *Gastrophilus equi* of modern authors. The maggots do not, when hatched, fall to the ground, but enter the stomach of the horse, where they bury themselves in the mucous lining.]

[2] [*Gastrophilus nasalis*, L.]

the ichneumon applied her tail to him, and stung him with great vehemence, so that he soon became dead and motionless. The ichneumon then running backward drew her prey very nimbly over the walk into the standing grass. This spider would be deposited in some hole where the ichneumon would lay some eggs; and as soon as the eggs were hatched, the carcase would afford ready food for the maggots.

Perhaps some eggs might be injected into the body of the spider, in the act of stinging. Some ichneumons deposit their eggs in the aurelia of moths and butterflies.

BOMBYLIUS MEDIUS.

The *bombylius medius* is much about in March and the beginning of April, and soon seems to retire. It is an hairy insect, like an humble-bee, but with only two wings, and a long straight beak, with which it sucks the early flowers. The female seems to lay its eggs as it poises on its wings, by striking its tail on the ground, and against the grass that stands in its way, in a quick manner, for several times together.

MUSCÆ.—FLIES.

In the decline of the year, when the mornings and evenings become chilly, many species of flies (*muscæ*) retire into houses, and swarm in the windows.

At first they are very brisk and alert; but as they grow more torpid, one cannot help observing that they move with difficulty, and are scarce able to lift their legs, which seem as if glued to the glass; and by degrees many do actually stick on till they die in the place.

It has been observed that divers flies, besides their sharp hooked nails, have also skinny palms, or flaps to their feet, whereby they are enabled to stick on glass and other smooth bodies, and to walk on ceilings with their backs downward, by means of the pressure of the atmosphere on those flaps; the weight of which they easily overcome in warm weather when they are brisk and alert. But in the decline of the year, this resistance becomes too mighty for their diminished strength; and we see flies labouring along, and lugging their feet in windows as if they stuck fast to the glass, and it is with the utmost difficulty they can draw one

foot after another, and disengage their hollow caps from the slippery surface.[1]

Upon the same principle that flies stick and support themselves, do boys, by way of play, carry heavy weights by only a piece of wet leather at the end of a string clapped close on the surface of a stone.

TIPULÆ, OR EMPEDES.

May.[2] Millions of *empedes*, or *tipulæ*, come forth at the close of day, and swarm to such a degree as to fill the air. At this juncture they sport and copulate; as it grows more dark they retire. All day they hide in the hedges. As they rise in a cloud they appear like smoke.

I do not ever remember to have seen such swarms, except in the fens of the Isle of Ely. They appear most over grass grounds.

APHIDES.[3]

On the 1st of August, about half an hour after three in the afternoon, the people of Selborne were surprized by a shower of Aphides which fell in these parts. They who were walking the streets at that time found themselves covered with these insects, which settled also on the trees and gardens, and blackened all the vegetables where they alighted. These armies, no doubt, were then in a state of emigration, and shifting their quarters; and might perhaps come from the great hop-plantations of Kent or Sussex, the wind being that day at North. They were observed at the same time at Farnham, and all along the vale to Alton.

[1] [The walking of flies on smooth surfaces, either vertical or looking downwards, has now been shown to depend upon a sticky fluid exuded from the glandular hairs of the feet. The hairs have been seen to be tipped with drops; the drops have been drawn out into transparent threads, or left upon slips of glass over which the fly had walked. See Blackwall, *Trans. Linn. Soc.*, xvi., pp. 487-492, 767-770 (1831); and Dewitz, *Pflüger's Arch.*, xxxiii., pp. 440-481 (1884).]

[2] [This word is not found in the original (ed. 1795).]

[3] [This extract is not found in the original (ed. 1795).]

ANTS.

August 23. Every ant-hill about this time is in a strange hurry and confusion; and all the winged ants, agitated by some violent impulse, are leaving their homes, and, bent on emigration, swarm by myriads in the air, to the great emolument of the *hirundines*, which fare luxuriously. Those that escape the swallows return no more to their nests, but looking out for fresh settlements, lay a foundation for future colonies. All the females at this time are pregnant: the males that escape being eaten, wander away and die.

October 2. Flying ants, male and female, usually swarm and migrate on hot sunny days in August and September; but this day a vast emigration took place in my garden, and myriads came forth, in appearance from the drain which goes under the fruit-wall; filling the air and the adjoining trees and shrubs with their numbers. The females were full of eggs. This late swarming is probably owing to the backward, wet season. The day following, not one flying ant was to be seen.[1]

Horse-ants travel home to their nests laden with flies, which they have caught, and the aureliæ of smaller ants, which they seize by violence.

GLOW-WORMS.[2]

By observing two glow-worms which were brought from the field to the bank in the garden, it appeared to us, that these little creatures put out their lamps between eleven and twelve, and shine no more for the rest of the night.

Male glow-worms, attracted by the light of the candles, come into the parlour.

EARTH-WORMS.

Earth-worms make their casts most in mild weather about March and April; they do not lie torpid in winter, but come forth when there is no frost; they travel about in rainy nights, as

[1] [White does not mention that the winged ants pluck off their wings with their own jaws, and then proceed to form new colonies.]

[2] [See note to p. 57.]

appears from their sinuous tracks on the soft muddy soil, perhaps in search of food.

When earth-worms lie out a-nights on the turf, though they extend their bodies a great way, they do not quite leave their holes, but keep the ends of their tails fixed therein, so that on the least alarm they can retire with precipitation under the earth. Whatever food falls within their reach when thus extended, they seem to be content with, such as blades of grass, straws, fallen leaves, the ends of which they often draw into their holes; even in copulation their hinder parts never quit their holes; so that no two, except they lie within reach of each other's bodies, can have any commerce of that kind; but as every individual is an hermaphrodite, there is no difficulty in meeting with a mate, as would be the case were they of different sexes.[1]

SNAILS AND SLUGS.

The shell-less snails called slugs are in motion all the winter in mild weather, and commit great depredations on garden plants, and much injure the green wheat, the loss of which is imputed to earth-worms; while the shelled snail, the φερεοικος, does not come forth at all till about April 10th, and not only lays itself up pretty early in autumn, in places secure from frost, but also throws out round the mouth of its shell a thick operculum formed from its own saliva; so that it is perfectly secured, and corked up as it were, from all inclemencies. The cause why the slugs are able to endure the cold so much better than shell-snails is, that their bodies are covered with slime as whales are with blubber.

Snails copulate about Midsummer; and soon after deposit their eggs in the mould by running their heads and bodies under ground. Hence the way to be rid of them is to kill as many as possible before they begin to breed.

Large, grey, shell-less cellar snails lay themselves up about the same time with those that live abroad; hence it is plain that a defect of warmth is not the only cause that influences their retreat.

[1] [Sessile or slow-moving animals are often hermaphrodite, *e.g.*, cirripeds, tunicates, polyzoa, oyster, land-snails; so are internal parasites, like tape-worms and flukes. White's explanation of the hermaphrodite condition of earth-worms accords with modern knowledge.]

SNAKE'S SLOUGH.

———There the snake throws her enamelled skin.
Shakspeare, Mids. Night's Dream.

About the middle of this month (September) we found in a field near a hedge the slough of a large snake, which seemed to have been newly cast. From circumstances it appeared as if turned wrong side outward, and as drawn off backward, like a stocking or woman's glove. Not only the whole skin, but scales from the very eyes, are peeled off, and appear in the head of the slough like a pair of spectacles. The reptile, at the time of changing his coat, had entangled himself intricately in the grass and weeds, so that the friction of the stalks and blades might promote this curious shifting of his exuviæ.

"———————— Lubrica serpens
"Exuit in spinis vestem." *Lucret.*

It would be a most entertaining sight could a person be an eye-witness to such a feat, and see the snake in the act of changing his garment. As the convexity of the scales of the eyes in the slough is now inward, that circumstance alone is a proof that the skin has been turned: not to mention that now the present inside is much darker than the outer. If you look through the scales of the snake's eyes from the concave side, viz. as the reptile used them, they lessen objects much. Thus it appears from what has been said, that snakes crawl out of the mouth of their own sloughs, and quit the tail part last, just as eels are skinned by a cook-maid. While the scales of the eyes are growing loose, and a new skin is forming, the creature, in appearance, must be blind, and feel itself in an awkward uneasy situation.

OBSERVATIONS ON VEGETABLES.

TREES, ORDER OF LOSING THEIR LEAVES.

One of the first trees that becomes naked is the walnut; the mulberry, the ash, especially if it bears many keys, and the horse-chestnut come next. All lopped trees, while their heads are young, carry their leaves a long while. Apple-trees and

peaches remain green till very late, often till the end of November: young beeches never cast their leaves till spring, till the new leaves sprout and push them off: in the autumn the beechen-leaves turn of a deep chestnut colour. Tall beeches cast their leaves about the end of October.

SIZE AND GROWTH.

Mr. Marsham of Stratton, near Norwich, informs me by letter thus:[1] "I became a planter early; so that an oak which I planted in 1720 is become now, at 1 foot from the earth, 12 feet 6 inches in circumference, and at 14 feet (the half of the timber-length) is 8 feet 2 inches. So if the bark was to be measured as timber, the tree gives 116½ feet, buyer's measure. Perhaps you never heard of a larger oak while the planter was living. I flatter myself that I increased the growth by washing the stem, and digging a circle as far as I supposed the roots to extend, and by spreading sawdust, &c. as related in the Phil. Trans. I wish I had begun with beeches (my favourite trees as well as yours), I might then have seen very large trees of my own raising. But I did not begin with beech till 1741, and then by seed; so that my largest is now at five feet from the ground, 6 feet 3 inches in girth, and with its head spreads a circle of 20 yards diameter. This tree was also dug round, washed, &c." *Stratton, 24 July,* 1790.

The circumference of trees planted by myself at 1 foot from the ground (1790).

		feet.	inches.
Oak in	1730	4	5
Ash	1730	4	6½
Great fir	1751	5	0
Greatest beech	1751	4	0
Elm	1750	5	3
Lime	1756	5	5

The great oak in the Holt, which is deemed by Mr. Marsham to be the biggest in this island, at 7 feet from the ground, measures in circumference 34 feet. It has in old times lost

[1] [It will be seen, on comparing this passage with the original in the first letter in the "Marsham and White correspondence," that it is very incorrectly quoted. —*Bell.*]

several of its boughs, and is tending to decay. Mr. Marsham computes, that at 14 feet length this oak contains 1000 feet of timber.

It has been the received opinion that trees grow in height only by their annual upper shoot. But my neighbour over the way, whose occupation confines him to one spot, assures me that trees are expanded and raised in the lower parts also. The reason that he gives is this: the point of one of my firs began for the first time to peep over an opposite roof at the beginning of summer; but before the growing season was over, the whole shoot of the year, and three or four joints of the body beside, became visible to him as he sits on his form in his shop. According to this supposition, a tree may advance in height considerably, though the summer shoot should be destroyed every year.

FLOWING OF SAP.

If the bough of a vine is cut late in the spring, just before the shoots push out, it will bleed considerably; but after the leaf is out, any part may be taken off without the least inconvenience.[1] So oaks may be barked while the leaf is budding; but as soon as they are expanded, the bark will no longer part from the wood, because the sap that lubricates the bark and makes it part, is evaporated off through the leaves.

RENOVATION OF LEAVES.

When oaks are quite stripped of their leaves by chaffers, they are clothed again soon after Midsummer with a beautiful foliage: but beeches, horse-chestnuts and maples, once defaced by those insects, never recover their beauty again for the whole season.

[1] [In the *Pharmaceutical Journal* for April 7, 1883 (vol. xiii., pp. 819-20, 834-35, 877-78), is an account by Professor Attfield of a bleeding birch at Ashlands, Watford. The tree was 39 ft. high and 7 in. in diameter. A branch, 1 in. diameter at 10 ft. from the ground, was cut across in March, before the leaves or catkins appeared. Nearly a gallon a day flowed from the wound; the flow was greater in sunshine than in shade, and greater by day than by night. The fluid contained nearly 1 per cent. of sugar.]

ASH TREES.

Many ash trees bear loads of keys every year, others never seem to bear any at all. The prolific ones are naked of leaves and unsightly; those that are steril abound in foliage, and carry their verdure a long while, and are pleasing objects.[1]

BEECH.[2]

Beeches love to grow in crowded situations, and will insinuate themselves through the thickest covert, so as to surmount it all: are therefore proper to mend thin places in tall hedges.

SYCAMORE.

May 12. The sycamore or great maple is in bloom, and at this season makes a beautiful appearance, and affords much pabulum for bees, smelling strongly like honey. The foliage of this tree is very fine, and very ornamental to outlets. All the maples have saccharine juices.

GALLS OF LOMBARDY POPLAR.

The stalks and ribs of the leaves of the Lombardy poplar are embossed with large tumours of an oblong shape, which by incurious observers have been taken for the fruit of the tree. These galls are full of small insects, some of which are winged, and some not. The parent insect is of the genus of *cynips*. Some poplars in the garden are quite loaded with these excrescences.

CHESTNUT TIMBER.

John Carpenter brings home some old chestnut trees which are very long; in several places the wood-peckers had begun

[1] [There are three kinds of ash-trees, such as bear staminate flowers only, such as bear pistillate flowers only, and such as bear both staminate and pistillate flowers.]

[2] [This extract is not found in the ed. of 1795.]

to bore them. The timber and bark of these trees are so very like oak, as might easily deceive an indifferent observer, but the wood is very shakey, and towards the heart *cup-shakey* (that is to say, apt to separate in round pieces like cups), so that the inward parts are of no use. They are bought for the purpose of cooperage, but must make but ordinary barrels, buckets, &c. Chestnut sells for half the price of oak ; but has sometimes been sent into the king's docks, and passed off instead of oak.

LIME BLOSSOMS.

Dr. Chandler tells, that in the south of France, an infusion of the blossoms of the lime-tree, *tilia*, is in much esteem as a remedy for coughs, hoarsenesses, fevers, &c. and that at Nismes, he saw an avenue of limes that was quite ravaged and torn in pieces by people greedily gathering the bloom, which they dried and kept for these purposes.

Upon the strength of this information we made some tea of lime-blossoms, and found it a very soft, well-flavoured, pleasant, saccharine julep, in taste much resembling the juice of liquorice.

BLACKTHORN WINTER.

This tree usually blossoms while cold N.E. winds blow ; so that the harsh rugged weather obtaining at this season, is called by the country people, blackthorn winter.

IVY-BERRIES.

Ivy-berries afford a noble and providential supply for birds in winter and spring ; for the first severe frost freezes and spoils all the haws, sometimes by the middle of November ; ivy-berries do not seem to freeze.

HOPS.

The culture of Virgil's vines corresponded very exactly with the modern management of hops. I might instance in the perpetual diggings and hoeings, in the tying to the stakes

and poles, in pruning the superfluous shoots, &c., but lately I have observed a new circumstance, which was a neighbouring farmer's harrowing between the rows of hops with a small triangular harrow, drawn by one horse, and guided by two handles. This occurrence brought to my mind the following passage:

"———————— ipsa
"Flectere luctantes inter vineta juvencos." *Georgic* II.

Hops are dicœcious plants: hence perhaps it might be proper, though not practised, to leave purposely some male plants in every garden, that their farina might impregnate the blossoms. The female plants without their male attendants are not in their natural state: hence we may suppose the frequent failure of crop so incident to hop-grounds; no other growth, cultivated by man, has such frequent and general failures as hops.

Two hop-gardens much injured by a hail-storm, June 5, shew now (September 2) a prodigious crop, and larger and fairer hops than any in the parish. The owners seem now to be convinced that the hail, by beating off the tops of the binds, has increased the side-shoots, and improved the crop. Query. Therefore should not the tops of hops be pinched off when the binds are very gross, and strong?

SEED LYING DORMANT.

The naked part of the Hanger is now covered with thistles of various kinds. The seeds of these thistles may have lain probably under the thick shade of the beeches for many years, but could not vegetate till the sun and air were admitted. When old beech trees are cleared away, the naked ground in a year or two becomes covered with strawberry plants, the seeds of which must have lain in the ground for an age at least. One of the *slidders* or trenches down the middle of the Hanger, close-covered over with lofty beeches near a century old, is still called *strawberry slidder*, though no strawberries have grown there in the memory of man. That sort of fruit did once, no doubt, abound there, and will again when the obstruction is removed.

BEANS SOWN BY BIRDS.

Many horse-beans sprang up in my field-walks in the autumn, and are now grown to a considerable height. As the Ewel was in beans last summer, it is most likely that these seeds came from thence; but then the distance is too considerable for them to have been conveyed by mice. It is most probable therefore that they were brought by birds, and in particular by jays and pies, who seem to have hid them among the grass and moss, and then to have forgotten where they had stowed them. Some peas are growing also in the same situation, and probably under the same circumstances.

CUCUMBERS SET BY BEES.

If bees, who are much the best setters of cucumbers, do not happen to take kindly to the frames, the best way is to tempt them by a little honey put on the male and female bloom. When they are once induced to haunt the frames, they set all the fruit, and will hover with impatience round the lights in a morning, till the glasses are opened. *Probatum est.*

WHEAT.

A notion has always obtained, that in England hot summers are productive of fine crops of wheat; yet in the years 1780 and 1781, though the heat was intense, the wheat was much mildewed, and the crop light. Does not severe heat, while the straw is milky, occasion its juices to exsude, which being extravasated, occasion spots, discolour the stems and blades, and injure the health of the plants?

TRUFFLES.

August. A truffle-hunter called on us, having in his pocket several large truffles found in this neighbourhood. He says these roots are not to be found in deep woods, but in narrow hedge rows and the skirts of coppices. Some truffles, he informed us, lie two feet within the earth, and some quite on the surface; the

latter, he added, have little or no smell, and are not so easily discovered by the dogs as those that lie deeper. Half a crown a pound was the price which he asked for this commodity.

Truffles never abound in wet winters and springs. They are in season in different situations, at least nine months in the year.

TREMELLA NOSTOC.

Though the weather may have been ever so dry and burning, yet after two or three wet days, this jelly-like substance abounds on the walks.

FAIRY RINGS.

The cause, occasion, call it what you will, of *fairy-rings*, subsists in the turf, and is conveyable with it: for the turf of my garden-walks, brought from the down above, abounds with those appearances, which vary their shape, and shift situation continually, discovering themselves now in circles, now in segments, and sometimes in irregular patches and spots. Wherever they obtain, puff-balls abound; the seeds of which were doubtless brought in the turf.

METEOROLOGICAL OBSERVATIONS.

BAROMETER.

November 22, 1768. A remarkable fall of the barometer all over the kingdom. At Selborne we had no wind, and not much rain; only vast, swagging, rock-like clouds appeared at a distance.

PARTIAL FROST.

The country people, who are abroad in winter mornings long before sun-rise, talk much of hard frost in some spots, and none in others. The reason of these partial frosts is obvious, for there

are at such times partial fogs about; where the fog obtains, little or no frost appears: but where the air is clear, there it freezes hard. So the frost takes place either on hill or in dale, wherever the air happens to be clearest and freest from vapour.

THAW.[1]

Thaws are sometimes surprisingly quick, considering the small quantity of rain. Does not the warmth at such times come from below? The cold in still, severe seasons seems to come down from above: for the coming over of a cloud in severe nights raises the thermometer abroad at once full ten degrees. The first notices of thaws often seem to appear in vaults, cellars, &c.

If a frost happens, even when the ground is considerably dry, as soon as a thaw takes place, the paths and fields are all in a batter. Country people say that the frost draws moisture. But the true philosophy is, that the steam and vapours continually ascending from the earth, are bound in by the frost, and not suffered to escape till released by the thaw. No wonder then that the surface is all in a float; since the quantity of moisture by evaporation that arises daily from every acre of ground is astonishing.

FROZEN SLEET.

January 20. Mr. H's man says that he caught this day, in a lane near Hackwood park, many rooks, which, attempting to fly, fell from the trees, with their wings frozen together by the sleet, that froze as it fell. There were, he affirms, many dozen so disabled.

MIST, CALLED LONDON SMOKE.

This is a blue mist which has somewhat the smell of coal-smoke, and as it always comes to us with a N. E. wind, is supposed to come from London. It has a strong smell, and is supposed to occasion blights. When such mists appear they are usually followed by dry weather.

[1] [See Letter LXI. to Barrington.]

REFLECTION OF FOG.

When people walk in a deep white fog by night with a lanthorn, if they will turn their backs to the light, they will see their shades impressed on the fog in rude gigantic proportions. This phenomenon seems not to have been attended to, but implies the great density of the meteor at that juncture.

HONEY-DEW.[1]

June 4, 1783. Vast honey-dews this week. The reason of these seems to be, that in hot days the effluvia of flowers are drawn up by a brisk evaporation, and then in the night fall down with the dews with which they are entangled.

This clammy substance is very grateful to bees, who gather it with great assiduity, but it is injurious to the trees on which it happens to fall, by stopping the pores of the leaves. The greatest quantity falls in still, close weather; because winds disperse it, and copious dews dilute it, and prevent its ill effects. It falls mostly in hazy warm weather.

MORNING CLOUDS.

After a bright night and vast dew, the sky usually becomes cloudy by eleven or twelve o'clock in the forenoon, and clear again towards the decline of the day. The reason seems to be, that the dew, drawn up by evaporation, occasions the clouds; which, towards evening, being no longer rendered buoyant by the warmth of the sun, melt away, and fall down again in dews. If clouds are watched in a still, warm evening, they will be seen to melt away, and disappear.

DRIPPING WEATHER AFTER DROUGHT.

No one that has not attended to such matters, and taken down remarks, can be aware how much ten days dripping weather will influence the growth of grass or corn, after a severe dry season. This present summer, 1776, yielded a remarkable instance; for

[1] [See note to p. 231.]

till the 30th of May the fields were burnt up and naked, and the barley not half out of the ground; but now, June 10, there is an agreeable prospect of plenty.

AURORA BOREALIS.

November 1, 1788. The N. aurora made a particular appearance, forming itself into a broad, red, fiery belt, which extended from E. to W. across the welkin: but the moon rising at about ten o'clock, in unclouded majesty, in the E. put an end to this grand, but awful meteorous phenomenon.

BLACK SPRING, 1771.

Dr. Johnson says, that "in 1771 the season was so severe in the island of Sky, that it is remembered by the name of the *black spring*. The snow, which seldom lies at all, covered the ground for eight weeks, many cattle died, and those that survived were so emaciated that they did not require the male at the usual season." The case was just the same with us here in the south; never were so many barren cows known as in the spring following that dreadful period. Whole dairies missed being in calf together.

At the end of March the face of the earth was naked to a surprising degree. Wheat hardly to be seen, and no signs of any grass; turneps all gone, and sheep in a starving way. All provisions rising in price. Farmers cannot sow for want of rain.

INDEX.[1]

Aberdavine (siskin), 111 *note.*
Achangre, 260; Jacobus de, 258.
Actedene, Richard, 260.
Adanson on migration of swallows, 80.
Aikin, Dr., his *Naturalist's Calendar*, xiii, xxix, 319 *note.*
Air, humming in the, 336.
Alice Holt, xxvii; held by grant from the Crown, 19, 20; extracts relating to, 266 *note;* lop and top of, 20.
Alpine swift, 72 and *note*, 149.
Alton, xxviii, 260; manufactures of, 11; Gurdon, bailiff of, 261.
AMERIA, one of the wives of Sir Adam Gurdon, makes a grant of lands to the Priory, 269.
America, animals peculiar to, 55.
American junipers resist frost, 224.
Ammonites of Selborne, 6.
Anathoth, a place of echoes, 181, 221.
Andalusia, mild winters of, 31; natural history of, to be investigated, 31; stone-curlew in, 73; movements of birds in, 114; swift in, 145; migration of swift in, 149.
Anecdote, White's use of, 64 *note.*
Animals, taming of, 50; στοργη of, 123; devouring their young, 124; sociality of, 155; different, attached to each other, 171.
ANNE, QUEEN, came to Wolmer-forest to see the red deer, 14.
Antiquities of Selborne, 237.
Ants, swarming of, 344.
Aphides, migration of, 209; enemies of, 232 *note;* tongue of, 232 *note;* at Selborne, 210, 231, 343.
Appendix to *Natural History of Selborne*, 317 *note.*
APRIL, 1770, the remarkable inclemency of its weather, 106.
Aquarium for fishes, 210.
Arbours on St. Barnabas' feast, 16.
Arden, Robert, 315 *note.*
Aristotle, on migration of birds, xxxii; on goats breathing by their ears, 33; on hawks and cuckoos, 151 *note.*
Arnold, Miles, Selborne parsonage leased to, 309.
ARUM, the cuckoo-pint, eaten in hard weather, by what, 34.
Ascension, birds in isle of, 79, 100.

[1] The entries which have the first word in small capital letters are from the original edition of 1789. They are of interest on several accounts; among others, because they contain old words, which occur nowhere else in the book.

Ashford, Thomas, last prior of Selborne, 297, 299, 300, 304; is pensioned by Magdalen College, 306.
Ashton, John, 297.
Ash-tree, a rupture one, what, 161; a shrew one, what, 162.
Ash-trees, 349.
Asses ploughing and penned, 151.
Attfield on bleeding birch, 348 *note*.
August, the most mute month respecting the singing of birds, 84.
Augustine Canons, 257 *note*.
Auk, little, found near Alresford, 81.
Auks, walk of, 189.
Aurora borealis, 356.
Austine, Ralph, vicar of Selborne, 253.
Autumn song of birds, 83.
Ayles Holt, *alias* Alice Holt, the forest of, 19; its grantees, 19.

Bacon-fly, 74.
Badeisley, preceptory at, 270.
Barker, Samuel, x.
—— Thomas, 9 *note*.
Barometer, used to measure height, 221; remarkable fall of, 353.
Barometers, Selborne and Newton compared, 221; South Lambeth, 221.
Baron, Robert, 304.
Barragon, a genteel corded stuff, where manufactured, 11.
Barrington, Hon. Daines, his *Naturalist's Journal*, xiii, xx; life of, xvii; on migration, xviii; on cuckoo, xviii; on the Linnæan system, xviii; on singing of birds, xix; favours the *Natural History of Selborne*, xxi, 105; on climate of Italy, 105; on torpidity of swallow-tribe, 114 *note*; his *Miscellanies*, xvii, 206.
Bartlett, on prehensile tail of harvest-mouse, 32 *note*.
Basingstoke, 260; Holy Ghost Chapel at, destruction of, 314.
Bassinges, or Basynges, 260, 263.
Bat, a tame one, some particulars about, 26; drink on the wing like swallows, 26; the large sort, some particulars about, 62; nondescript in 1769, 62; more account of, 76.
Bats, species of, 51; of Selborne, 25; food of, 26, 62; on the Thames, 26; sexes of, 76; anatomy of, 76.
Beachy Head, Cornish choughs found on, 80.
Beans sown by birds, 352.
Bear's foot (Hellebore), 185.
Beaufort, bishop of Winchester, his register imperfect, 283.
Bee-bird, migration of, 114.
Beech, 349; the most lovely of all forest trees, 1.
Bees, idiot boy addicted to, 160; supposed to be injured by echoes, 180; not affected by sounds, 181; should not be exposed to sun in winter, 223; feed on honey-dew, 232; carder-bee, 340; cucumbers set by, 352.
Bell, Prof. Thomas, his *Life of Gilbert White*, ix *note*, xxx; on White and Pennant, xvi; his edition of White's *Selborne*, xxx; on black grouse, 13 *note*; on names of Sussex meres, 18 *note*; on White's first letter to Pennant, 21 *note*; on water-shrew, 62 *note*; on comparison of birds' legs, 203 *note*; on White's barometer, 221 *note*; on Selborne Church, 247 *note*.

Bell on gypsies in Tartary, 157.
Bells of Selborne Church, 248.
Belon's account of migration of hawks and kites, 114.
Beme, 260.
Bene's parsonage, 252.
Bennett on glands of head of antelopes, 32 *note*.
Bennett's edition of White's *Selborne*, xxx.
Bensted, 266 *note*.
Bere, forest of, 78.
Berger, Calendar of flora by, 28.
Berne, *alias* Bernes, Peter, sacrist of Selborne Priory, 288; appointed prior by lapse to the visitor, 290; resigned his priorship, 291; is re-elected, 295; relinquishes again, 296; is pensioned, 298; the indenture delivered to him, as sacrist, from the prior of Selborne [Appendix].
Besoms made of moss, 159.
Bidwell on nests in which cuckoo lays, 102 *note*.
Bilberry, 185; creeping or cranberry, 185.
Bin's, or Bean's Pond, for what remarkable, 17.
Birch, bleeding of, 348 *note*.
Birds, summer, of passage, a list of, 37, 94; living ones shewn here, when from distant regions, why usually of the thick-billed genera, 69; of summer passage, seen spring and autumn at Gibraltar, 72; soft-billed, that winter with us, how supported, 86, 87; of winter passage, a list of, 95; that continue in full song till after midsummer, 96, 97; why fatten in moderate frosts, 104; what sorts are pulveratrices, 108; what occasions their congregating, 119; in the season of nidification, tame, 152; various manner of motion of, 187; notes and language of, 189.
Birds, migration of, *see* Migration of birds; of Wolmer pond, 19; on rigging of ships, 31; best observed before the leaves are out, 38; monogamous, 67; pairing of, 67, hard-billed and soft-billed, 69; that are silent about midsummer, 83; in Ascension, 79, 100; autumn-song of, 83; modes of drinking of, 84; soft-billed that stay the year, 95; that sing in the night, 96; that are silent at midsummer, 98; that only sing very early, 98; that are hardly to be called singing-birds, 98; that sing as they fly, 99; that breed early, 99; double-brooded, 100; "methodus" of, 100; that sing late, 100; song and incubation of, 100; in cages, 101; soft-billed, food of, 102; hard-billed, food of, 102; singing after midsummer, 103; colours of, 107; young, sex of, hard to be distinguished, 107; flight and gait of, 107, 187; that dust or wash, 108; of Ringmer, 110, internal migration of, 111; song of, due to rivalry, 120; parental care of, 123; and lice, 127; that are ill adapted for migration, 134; moulting-season of, 148; nidification of, 152; congregating of, 119, 155; dispersion of, 182; that walk, 189; in snowy weather, 226; destroyed by long frost, 228; Observations on, 321; insect-eating, 321; their choice of food, 321; in severe weather, 321; of prey and insects, 321; grain-eating, can subsist on leaves, 325; swimming of, 327; diving, 327; that build on the ground, 330; sowing of beans by, 352.
Bird's nest (Monotropa), 185.
—— —— ophrys, 186.
Bishop's Waltham, sand-martins at, 142.
Black Act, 15.
—— beetle, 337.

Black canons, 257 *note*.
—— dolphin (turnip flea), 74.
—— grouse, 13.
—— malm (chloritic marl), 2.
"Black Spring" of 1771, 356.
Blackbird, sings in autumn, 83; sings as it flies, 99; destroyed by frost, 228.
Black-cap, an elegant songster, 85, 101.
—— a summer migrant, 23, 38, 67, 94; its arrival, 67, 321; sings after midsummer, 97; ill-provided for long flights, 134.
Blackmoor or Blackmore, 254, 316; farm of, 17; oaks of, 3; Roman coins found at, 240 *note*.
Blackthorn, winter, 350.
Blackwall on gossamer, 154 *note*.
Black-winged stilt, 202.
Blakemere, 271.
Blindworm, 41.
Blue rag, 7.
Boars in Wolmer-forest, 20; effect of loss of tusks on, 170.
Bog-wood of Wolmer-forest, 12, 219.
Bohemian chatterer, 27, 96.
Bombylius, 342.
Booby, 100.
Boots, wearing of, 281.
Bot-fly, 341.
Botany, its uses, 183.
Boughton, Richard, vicar of Selborne, 253.
Boussingault on honey-dew, 232 *note*.
Bowers on St. Barnaba's feast, 16.
Boy, an idiot, his strange propensity, 160; eats bees, &c., 160.
Bradeseth, 271.
Brady, G. S., on fauna of dew-ponds, 167 *note*.
Brambling, *see* Snow-fleck.
Brampton, Henry, *alias* Brompton, 284.
Bramshot, 1, 12.
Breadalbane, seat of Lord, 89.
Brighthelmstone, bustards on downs near, 110.
Brimstone-lodge, some account of, 17.
Bristowe, Duncombe, vicar of Selborne, his bequests, 256.
British Museum, xiii.
British Zoology, Pennant's, 60.
Bromesgrove, John, 293.
Brompden, 260.
Brooks at Selborne, what fishes they produce, 25.
Brown owl, castings of, 25.
Bryan Galfrid, 294.
Bucks and does, herd separately in winter, 112.
Buffon, xiii, xiv, 55 *note*.
Bug, harvest, some account of, 73.
Bull of Innocent VIII., 305; of Pope Martin, 286.
Bullfinch, turns black, 34, 81.
—— song of, 99.
Bull's head (fish), 25.

Bunting, a very rare bird at Selborne, 30, 99, 111.
—— cirl, 30 *note;* common, 30; song of, 99; common along coast, 111.
Burials at Selborne Church, 249.
Burning of heaths, 16.
Burrel, *see* Fly.
Burton on migration of birds, xxxii.
Büsgen on honey-dew, 232 *note.*
Bustard, its timidity, 100; on downs near Brighthelmstone, 110.
Butcher-bird, red-backed, 46, 80.
—— great grey, 79.
Butt-close, 308 *note.*
Butt-wood-close, 308.
Buzzards, honey, some account of, 89.
—— flight of, 188.
Byfield, Richard, vicar of Selborne, his bequest, 254.

Cabbages known to our Saxon ancestors, 177.
Calabria and Sicily, earthquakes in, 233.
Calculus ægogropila, 76.
Cambridgeshire, spires of, 50.
Canaries, how to naturalise, 28.
Cancer, said to be cured by toads, 44, 49.
Cane, a weasel, 34.
Cane, William Henry, vicar of Selborne, 255.
Canons regular, 257 *note.*
Canwood, Henry, 297.
Capons have small combs, 169.
Caprimulgus, or fern-owl, some new observations about, 77.
Carder-bee, 340.
Carew on migration of birds, xxxiii.
Carniola, birds of, 70, 106, 108; quicksilver mines of, 106.
Carp, in ponds on Wolmer-forest, 18; habits of, 85.
Carpenter, Richard, preceptor of Sudington, 271, 273.
Castration, its strange effects, 169.
Cat suckles a leveret, 171; electric during frost, 230; and squirrels, 334.
Cats, house, strange that they should be so fond of fish, 68.
—— catch swifts on the wing, 150; and hearth-crickets, 200; running out for shot sparrows, 323.
Cattle resorting to water, 18; sociality of, 155; poisoned by yew, 250; and wagtails, 332.
Celery little known in England in 1663, 178.
Chafers or tree-beetles, 117, 336.
Chaffinch silent before midsummer, 98; subsists on hard food, 102; cuckoo's egg in nest of, 102; nest of, 214.
Chaffinches, vast flocks of hens, 29, 35, 81; hens, more account of, 112.
Chalk of Selborne, 2 *note.*
Chalk-hills, why peculiarly beautiful, 133.
Chalk-marl of Selborne, 2 *note.*
Chandler, Dr. Richard, life of, xx; on lime-blossoms, 350.
Chantries, 273 *note.*
Chantry-services, 280.
Chapel-farm, 260, 309.

Chapel-farm field, 264, 309.
—— manor, near Oakhanger, 316.
Chapman, John, 304.
Charter of Selborne Priory, 259; for choosing of a prior, 275.
Chaucer on morals of the clergy, 287.
Cherwell, wagtails on, 101.
Chestnut-timber, 349.
Chicken, notes of, 191.
Chiffchaff, a summer migrant, 38, 94; hardly to be called a singing bird, 99; sings on to September, 99; its note, 328; its arrival, 328; (?) 35 *note*.
Chinese dogs fattened for eating, 217.
Chips in mortar, 8.
Chough, 80, 110.
Christian Malford, land-rails at, 325.
Church, Selborne, particulars about, 243, 248.
Churches, Norfolk, Hampshire and Sussex meanly furnished with, 49; orientation of, 249; uncleanly condition of, 281.
Churn-owl, *see* Nightjar.
Churr-worm (mole-cricket), 202.
Cinque-foil, marsh, 185.
Cistern of monastery and leaden pipes, 308.
Claw of nightjar, 77.
Clay's pond, fossils at, 6.
Cleve, Michael, 304.
Climate of Selborne, 222 f.
Clouds, morning, 355.
Clutterbuck on dew-ponds, 165 *note*.
Clydegrove, Stephen, 297.
Clyff, Michael, 303.
Cobham, Lord, a promoter of horticulture, 177.
Coccus vitis viniferæ, strange and rare insect in England, 208.
Cock, crowing of, 191.
Cockchafer, 329; small, 84.
Cockroach, 337.
Cockscomb oyster, 6.
Coins, Roman, found at Selborne in great abundance, 239-40.
—— found in Wolmer pond, 19, 239.
Cold descends from above, 224; greatest in hollows, 229; maximum of, 227.
Colour, of plumage affected by food, 34; affects birds' choice of food, 321.
Colours of birds in pairing time, 107.
Comarum, 185.
Comb, family, for the use of hinds, 289 *note*.
Commandries, 270 *note*.
Commerce in vegetable products, 184.
Compedes of Linnæus, 189.
Conduit-wood, a spring in, 308.
Coney-croft, 316.
——— hanger, 316.
Congregating of birds, 112, 119.
Cook's voyages, xiv.
Cooper, bishop of Winchester, 253.
Coot, flight of, 189.

Corn and weather, 355.
Corn-mill of a manor, 310.
Cornish chough at Beachy Head, 80; on cliffs of Sussex, 110.
CORNUA AMMONIS, where found, 6.
Corrodies, 280.
Coryarich, zigzag up, 89.
Couke, John, vicar of Newton, 285.
Court-leet and Court-baron at the Grange, 315.
Cowper, William, 303.
Cows and wagtails, 332.
Cranberry, at Bin's pond, 185.
Cranes, flight of, 189; noisy and loquacious, 190.
Cranmer, 18.
Cressi Hall, heronry at, 50, 52.
CRICKET, field, a monography of, 196; hearth, a monography of, 199; mole, a monography of, 201.
—— hearth, 337, 338.
CROCUS, the spring, and saffron, their different seasons of blossoming wonderful, why, 186.
Crops and frost, 225, 228; and dripping weather after drought, 355.
Crossbill at Selborne, 25; a chance migrant, 96; flights of, at Ringmer, 135.
Crown, Wolmer-forest, grants of by, 19; lessees of, 266 *note*.
Crows go in pairs the whole year round, 80; grey, 84; swaggering of, 188; amorous sound of, 190.
CUCKOO, particulars about, 38, 56, 94, 102, 104, 109; sing in different keys, 117-8; a young one in the nest of a titlark, 109; several skimming over a pond, why, 109.
—— small size of its egg, 104 *note*; its egg in nest of hedge-sparrow, 104 *note*; egg-laying of, 102; food of, 109, 167; in nest of meadow-pipit, 116; Linnæus on, 109; note of, 118; number of eggs laid by, 105; supposed reason for its not incubating, 166.
Cuckoo-pint, eaten by thrushes, 34.
Cucumbers set by bees, 352.
Culver-croft, 316.
CUMBERLAND, WILLIAM, DUKE OF, takes away the red deer from Wolmer-forest, 14.
Cundyth (conduit) wood, 308.
"Cup-shakey" timber, 350.
CURLEW, STONE, some account of, 35; more particulars of, 72.
—— protective resemblance of, xxiii, 36, 73, 107 *note*; migration of, 328.

Dabchick, flight of, 189.
Daker-hen (landrail), 324.
Dalrymple quoted, 177 *note*.
Danewort, 186.
Dartmoor, ring ousels on, 59, 80.
Dartmouth, first Earl of, 266 *note*.
Darwin on formation of mould by earthworms, xxiii, 173 *note*; on origin of domestic pigeon, 91 *note*; on gossamer, 154 *note*; on honey-dew, 232 *note*.
DASTARD, *alias* WASTARD, natural son to Sir Adam Gurdon, 269.
Dates to deeds, 258 *note*.

Daws breed in unlikely places, 48.
—— *see* Jackdaws.
De Geer, xiii, xiv.
De Rupibus (Peter), founder of Selborne Priory, 256.
Deer, red, in Wolmer-forest, some account of, 13; fallow, in Holt-forest, 20; fallow, their spiracula, or breathing places, 32.
—— association of with cows, 155.
Deer-stealers, 15.
Derham, xv, xxv; on migration of frogs, 40.
Dew-ponds, 163.
Dickens on rush-burners, 159 *note*.
Dipper, 110.
Diptera not torpid in winter, 336.
Diseases caused by bad diet, 176.
Dispersion of birds, pretty equal, why, 182.
Distant on assimilative coloration, 34.
Diver, great speckled, in Wolmer-forest, 326.
Divers (birds), walk of, 189; swimming of, 326.
Dogs, Chinese, from Canton, 217.
—— blinded by gossamer, 153; fattened in China for eating, 217; of South America, fed for the table, 217; of Pacific Islands, bred upon vegetables, 217; ears of, 218; used to draw sledges, 218; refuse bones of game, 218; and of carrion-birds, 218.
Domesday-book, account of Selborne from, 240.
—— silent respecting churches, 243.
Dorton, or Durton, mill at, 258, 310; common at, 269 *note*.
Dove, ring, *see* Ring-dove.
Dove, stock, or wild winter-pigeon, 80; stock, many particulars of, from 90 to 93.
Doves, cooing of, 190.
Dove-house of a manor, 310.
Dove-houses at Culver-croft, 316.
Downs, Sussex, a lovely range, 132.
—— —— sheep on, 133.
Drey, squirrel's nest, 334.
Drinking of bats, 26; of swallows, 138; of swallows and swifts, 82.
Dripping weather after drought and crops, 355.
Drumlanrig, 89.
Duck, wild, a winter bird of passage, 96; migration of, 115; with arms of King of Denmark on its collar, 115; gait of, 189; wings of, 189; noisy and loquacious, 190; sexual distinction of voice, 191.
Ducks and geese rest on the water, 323.
Dugdale on Selborne Priory, 259.
Duncun, Gunnorie, 269.

Eagle-owl, 61.
Eagles, notes of, 190.
Earthquakes of 1783, 233.
Earthworms, life of, 173, 344; promoters of vegetation, 172.
Eastbourne, wheatears at, 135.
Echo, a polysyllabical one, 178; why since mute, 181; several remarks on echoes, 178, 181; a charming description of echoes from Lucretius, 181.

Echoes occasioned by the discharge of swivel guns, 220.
Eckmark, on migration of Grallæ, 118.
Editha, queen of Edward the Confessor, 240, 241.
Edriche croft, 258.
Edward I. and Gurdon, 262.
—— II. in Wolmer Forest, 242.
—— III. at Kingsley, 242.
Eel, 25.
Eels, generation of, 83.
Eft, *see* Newt.
Eggs in insect-larvæ, 44.
Eglintoun, seat of Earl of, 89.
Ela Longspee (1281), 273.
Elder, dwarf, 186.
Election of Prior at Selborne, 275, 284, 292, 293, 295, 297.
Elk or moose of N. America, 64, 65, 68.
Elliot's (house at Selborne), 265.
Ellis, on mud-iguana, 41.
Elm, broad-leaved, 4.
Elmer the game-painter, 20; his picture of hybrid pheasant, 324.
Elstede, Richard, 284.
Empedes or tipulæ, 343.
Emshot, 1.
Endive little known in England in 1663, 178.
Entomology, 52, 75.
Ephemera, 56, 339.
Estates, tenure of the Selborne, 316.
Etty, Andrew, vicar of Selborne, 256; his epitaph, 247.
Eunuchs, 169.
Evans on cuckoo's eggs, 103 *note*.
Eve-churr, *see* Mole-cricket.
Eve-jarr, *see* Nightjar.
Evergreen leaves imbibe little, 163.
Evergreens and frost, 222, 224, 228, 229.
Evesham, Gurdon after battle of, 261.

Fair at Selborne, 265 *note*, 316.
Fairwise, Thomas, Prior of Selborne, 293, 294.
Fairy-rings in turf, 353.
Falcon, peregrine, particulars about, 24, 26, 216.
Fallow deer, in the Holt, 20; never seen in Wolmer-forest, 20; cavities in head of, 32.
Faringdon, 1.
Fattening in frost, 104.
Faunists, 119.
Fawn and cows, 155.
February called sprout-cale, 177.
Fellwort (*gentian*), 186.
Females which devour their young, 124.
Fens, insufficiently explored, 51.
Fern-chafer (Rhizotrogus), 77, 84, 329.
Fern-owl, *see* Nightjar.

Ferrol, John, 253 *note*.
Ffarnham, Walter, 284.
Field-cricket, history of, 196.
Field-mouse, with young, 124; its mode of opening a nut, 214.
FIELDFARES, strange that they do not breed in England, 60; nor in Scotland, 60; roost on the ground, 64.
—— migration of, 30, 96, 116; perching and roosting of, 96; retire in spring, 112; breed in Sweden, 113; nest of, 113, 117; food of, 321.
Fire-flies, 58 *note*.
Firestone, 7.
Fisher, William, vicar of Selborne, 253.
FISHES, gold and silver, why very amusing in a glass bowl, 210.
—— of Wolmer Forest, 18; of Selborne, 25.
Flamingo, compared with black-winged stilt, 203.
Fleas in sand-martins' holes, 143.
Flies, plague of, in 1783, 233; walking of, 342.
Flight of birds, 187; of insects, 200.
Flocking of birds, 112, 119; of hen chaffinches, 112; of linnets, 112; of rooks and daws, 120; of rooks and starlings, 120.
FLY, bacon, injurious to the housewife, 74; Whame or burrel, *Oestrus curvicauda*, 74.
FLY-CATCHER, some particulars of, 22, 25, 37, 67, 86, 94, 123, 321.
Fog (dry), of 1783, 232; reflection by, 355.
Foliage of trees lasting late, 117.
Folkestone beds, 3 *note*, 8.
Food of man, 183.
Forest-fly, 127; stone, 8.
Forests, and water-supply, 163; royal, xxvii, 12, 241, 266 *note*.
FORMS, five, respecting the chusing a prior, 275.
Forrest, on flocks of starlings, 119 *note*.
Fort William, 89.
Fossils of Selborne, 5.
Fothergill on cultivation in England of shrubs from N. America, 223.
Fowler, W. Warde, on Gilbert White, vicar of Selborne, ix; on Sampson White, ix; on Gilbert White's relations to his college and the church, xi; on White and protective resemblance, xxiii; on White's view of the migration of birds, xxxi.
Fowls, 108; and wasps, 321.
Freestone (upper greensand), 2, 7.
Freezing of fluids in capillary tubes, 227 *note*.
French, prolix in natural history, 68.
Frinsham pond, 79.
Frogs, 39; migrate from pools, 40; Swammerdam on, 40.
FROST, that in January, 1768, described, 222; that in January, 1776, 225, that in December, 1784, 228.
—— birds that first suffer by, 104; effect of in fattening, 104; protection of shrubs from, 222; and evergreens, 222, 224, 228, 229; advances gradually, but may end suddenly, 224; and rainfall, 225; partial, 227, 353.
Frostbites, 230.
Frozen sleet and rooks, 354.
Fruit-trees injured by heat, 231.
Furze killed by frost, 230; range of, 230 *note*.

Gahn on common grasses, 184 *note*.
Gallinæ, gait and flight of, 188; roosting high, 323.
Galls of Lombardy poplar, 349.
Gally Hill, 315.
Gardens, history and effects of, 177.
Gassendus, on effect of music, 214.
Gault, 3 *note*.
Gaveston, 242.
Geese and ducks rest on the water, 323.
Gentian, autumnal, 186.
Geoffroy, xv.
Geology of Selborne, xxvii.
GERMAN SILK-TAIL, *garrulus bohemicus*, shot, 27.
Gibraltar, natural history of, x; birds of, 71, 72; migration of swifts at, 149.
Gipsies, *see* Gypsies.
Glead or gled (kite), 188.
Glebe of Selborne, 265.
Glow-worm, 57 *note*, 344.
Gnats on snow, 321.
Goats breathing through their ears, Aristotle on, 33.
Goatsucker, *see* Nightjar.
Godesfield, 270.
Gold and silver fishes, 210.
Golden thrushes, 114.
Golden-crowned wren, does not migrate, 87, 95; its *note*, 98; not timid, 100.
Goldfinch, time of its song, 98, 103.
Goose Green, a lodge in the Holt, 20.
Goose, wild, a winter bird of passage, 96; flight of, 189; voice of, 190.
Gorfin, Walter, 290.
GOSSAMER, a wonderful shower of, 153.
—— various naturalists on, 154.
Gracious Street, 315.
Grallæ, migration of, 118.
GRANGE, the, belonging to Selborne Priory, 315.
Grange, 254, 313, 315.
Grasses neglected, importance of their study, 184.
Grasshopper-lark, its note, 37; a summer bird of passage, 38, 94; its arrival, 67; chirps all night, 83, 99.
Gray, the poet, xiv.
Great Ward le ham, 1.
GREATHAM, the manor farm of, its privilege in Wolmer-Forest, 16.
—— 1, 12; farms of, 17.
Grebe, little, flight of, 189.
Green lizard, 42, 52.
Greenfinch, time of singing of, 98; its gestures, 188.
Greensand, lower, 3; upper, 2, 3, 7.
Grimm, the artist, 264.
Grosbeak, 25; does not regularly migrate, 96; considerable flocks of, 110; food of, 333.
Grouse, black, in Wolmer-forest, 13.
Guernsey lizard, 52.
Guinea-fowl, roosting of, 323.

GURDON, SIR ADAM, who and what, 261; where, a man of rank and property, 261; his wives, 262; builds an oratory in his manor-house, 263; grants the Plestor to the Priory of Selborne, 264; becomes warden of Wolmer-forest, 266; a distringas against him, 267; enlists troops for the king, 267; his advanced age, 268; his seal and arms, 268; seems to have had no concern with the Knights Templars, 272.
—— bailiff of Alton, 261 f.
Gurdon-manor, 265, 316.
Gyfford, W., 304.
GYPSIES, some particulars about, 156.

Haggard falcon, *see* Peregrine falcon.
HAILSTORM at Selborne in summer 1784, 234.
Hales, Dr. Stephen, xii, xv; quoted, 12 *note*, 154 *note*, 164, 224 *note*, 231 *note*.
Halyborne, Thomas, 284.
Hamilton, 89.
Hammond, John, rector of Hetlegh, 290.
Hampshire meanly furnished with churches, 49; manufacture of rushlights in, 158.
HANGER, the, 1.
Hard-billed and soft-billed birds, 69.
Hares, white or Scotch, 61; species of, 61 *note;* in snowy weather, 226.
Harteley Mauduit, 1.
Harting, his edition of White's *Selborne*, xxx; on whinchat, 81 *note;* on food of woodcock, 101 *note;* on cuckoo, 103 *note;* on great bustard, 110 *note;* on migration of hawks, 114 *note;* on duck found at Trotton, 116 *note;* on grosbeak, 333 *note*.
Harvest-bug, 73.
—— mouse, 23 and *note;* description of, 27; further particulars of, 31; prehensile tail of, 32 *note;* name for, 35; devoured by dogs, refused by cats, 84.
HASEL WYCH, 4.
Hasselquist on short-winged birds in the channel, 31; on migration of black-winged stilt, 203.
Hawfinch, *see* Grosbeak.
HAWK, SPARROW, the dread of housewives, 90.
—— —— breeding in old crows' nests, 83; killed by brood-hens, 192.
Hawkley, closes in, 255; (Hocheleye), 267.
HAWKLEY-HANGER, the amazing fall thereof, 194.
Hawks, castings of, 25; migration of, 114 *note;* and swallows, 138; and swifts, 148; and cuckoos, 151 and *note;* spring migration of, 151 *note;* notes of, 190; seizing of prey by, 326.
Haws, failure of, 28; food for birds, 28.
HAZE, or smokey fog, the peculiar one which prevailed in summer 1783, 232.
Heat in March, effects of, 173.
HEATH-FIRES, why lighted up, 16.
Hedge-sparrow, 83; its food in winter, 87; does not migrate, 95; its time of singing, 97; and cuckoo, 104.
HEDGEHOG, some account of, 63.
Hedlegh, 1, 12.
HELIOTROPES, summer and winter, how to make them, 192.

Hellebores, 185; flowering of, 186.
Helleborine, 186.
Hemp seed, its effect on plumage of bullfinch, 34, 81.
Hen, sitting on a shapeless stone, 104; parental care of, 123; notes of, 191; and ducklings, 334.
Hen-harrier breeds on the ground, 83; flight of, 188; and pheasant, 326.
Henry III. grants lands to Selborne Priory, 259.
—— de Blois, 270.
Herbert on drumming of snipe, 81 *note*.
Herissant, Monsieur, mistaken in his reason why cuckoos do not use incubation, 166.
Hermaphrodite animals, 345.
Heron, flight of, 188.
Heronry at Cressi Hall, 50, 52.
Hibernation in holes, not practised by sand-martin, 143; (supposed) of swallows and other birds, xviii, xxxi to xxxiv, 21, 28, 29, 53, 78, 114, 121, 136, 174, 213, 216, 330, 331, 332; of insects, reptiles and quadrupeds, 174.
Hills, walking, and travelling mountains, 194.
Hippobosca of swallow, 127; of swift, 149, 150, 207.
Hirundines, British, when they arrived in three very distant counties, 151.
—— history of the British, 127 f.; number of broods of, 148.
Hirundo rupestris, 71.
Hoadly, Bishop, refuses to restock Waltham chase, 15.
Hochangre, *see* Oakhanger.
Hogmer, 18.
Hogs, would live, if suffered, to a considerable age, 170.
Hollow lanes, 8.
Holt, Ayles, a royal forest; some account of, xxvii, 19, 20, 266 *note*.
—— perambulation of, 17; measured, 17 *note*; lop and top of, 20.
Holt, Anne, mother of Gilbert White, ix.
—— Thomas, rector of Streatham, ix.
Holy Ghost Chapel at Basingstoke, destruction of, 314.
Honey-buzzard, nest, description and food of, 89; name of, 321.
—— dew, 231 and *note*, 355; Hooker on, 232 *note*.
Hoopoes, 24.
Hops, soil good for, 3, 350; aphides on, 210.
Horn-room at Wilton, 69.
Horse and hen keeping company, 155.
—— a dying, 334.
Horse-bot, 74.
Horses attacked by epidemic during frost of 1768, 223; poisoned by yew, 250.
Horticulture, progress and effects of, 177.
Hot summers of 1781 and 1783, 230; and wheat-crops, 352.
Hounds, the king's, 335.
House, vicarage, at Selborne, 249.
House-cricket, *see* Cricket.
—— dove derived from rock-dove, 91.
—— flies, 342.
—— martin, *see* Martin.
—— sparrow, *see* Sparrow.
Howe, General, 19.

Howe, General, turns out wild boars in Holt-forest, 20.
—— Ruperta, daughter of Prince Rupert, 19.
Hudson, xiv, xv.
Humming of snipes, 38; in the air, 336.
—— bird hawk-moth, 340.
Hunter, John, xiii; on glands of head of deer, 32 *note*.
Hunting forbidden to canons of Selborne, 279.
Huntingdonshire, spires of, 50.
Husband, David, 304.
Huxham, Dr., his account of rain at Plymouth, 220.
"Hybernaculum" of martins, 78.
Hybrid pheasant, 324.
Hyde, minister in Winchester, 270.
Hylling, John, Vicar of Newton Valence, 290.

Ice, spicules of, in air, 229.
Ichneumon and spider, 341.
Idiot addicted to bees, 160.
Ila, Lord, a promoter of horticulture, 177.
Indian grass, 52.
Inkforbye, William, vicar of Selborne, 253.
Insect-larvæ full of eggs, 44.
Insects, noxious, 75; torpid, 174; hearing of, 180; frisking immediately after severe frost, 227; and birds of prey, 321, 322; in winter, 335; at night, 335; wood-boring, 336.
Instinct, sometimes varies and conforms to circumstances, 214; often perfectly uniform, 214.
—— in animals, a limited faculty, 139; early, 169; discussion on, 213; of partridge, 323.
Internal migration of birds, 111.
Irby on migration of swifts at Gibraltar, 149 *note*.
Ireland, why worthy the attention of a naturalist, 88.
Israelites, leprosy among, 175.
Italy, climate of, in ancient and modern times, 105.
Ivy, its leaves condense very fast, 163; its berries, 322, 350.

Jackals and lions, 120.
Jackdaws nesting in Stonehenge, 48; building underground, 48, 49; walking of, 188.
Jacobus de Achangre, 258.
—— de Nortun, 258.
Jamaica, birds of, 108.
Jar-bird, what, 38.
—— *see* Nuthatch.
Jay, flight of, 188.
Jenkyn, Richard ap, 294.
Jenner on cuckoo, 103 *note*.
Jews, lenders of money, 259.
Johanna, daughter and heiress of Sir A. Gurdon, grants lands and tenements to the Priory, 269.
John de Venur, or Venuz, 260.
—— King, at Ward-le-Ham, 242.
Johnson, Dr., on the "black spring" of 1771, 356.

Ken, Morris, amuses Edward II., 242.
Kestrel, its breeding-places, 83; its flight, 188.
Kew Gardens, xiv.
King John's Hill, 17.
Kingfisher, flight of, 188.
King's staghounds, 335.
Kingsley, 242, 266 *note*.
Kite, migration of, 114; flight of, 188; picking up ants, 322.
Kite's Hill, 315.
Knights Hospitalers, 269 *note*.
Knights Templars, had considerable property at Selborne, 269; lived in a mutual intercourse of good offices with the Priory, 271.
—— —— symbol of, 245; supposed graves of, 245; arms of, 263; account of, 269 *note*; rules of, 279 *note*.
Knowles, Thomas, 307.
Krakatoa, eruption of, 233 *note*.
Kramer, his Elenchus, 71; on woodcock, 113.
Kuckalm on birds of Jamaica, 108.

La liega or La lyge, the site of Selborne Priory, 258.
Lacuna, Guylleryde, 295.
Ladies' traces, 186.
Lakes of Wolmer-forest, 17; wild fowl of, 25.
Lampern, 25.
Landrail, a summer bird of passage, 38; its note, 94; account of, 324.
Landslips, 194.
Landsprings, *see* Lavants.
Lanes, hollow, rocky, their peculiarities, 8; abound with filices, 9.
Langelande, Robert, severe on the religious,287.
Langley, Radolphus, 301.
Langrish, Nicholas, who had been a chantry priest, sent by Magdalen College to celebrate mass at the dissolved Priory of Selborne, 307, 274, *note*.
Lapwing, haunts and congregating of, 81; and starlings, 120.
Larks, white, probably snow-flakes [Snow Bunting], 34; grasshopper, some curious circumstances about, 37, 83; (*see* Grasshopper Lark).
—— flocking of, 112; their walk, 189.
Larvæ of insects, full of eggs, 44; injury caused by, 173.
Lathyrus, wild, 186.
Laurel, spurge, 186.
Lavants, of Sussex, Hampshire and Wiltshire, 141.
Le Buri, 308 *note*.
Leaves, casting of, 346; renovation of, 117, 348.
Legge, H. B., 19.
Legs of black-winged stilt and flamingo, 203; of colymbi and mergi, 327.
Leicester House museum, 6.
Lemyngton, John, 284.
Leper, a miserable one in this village, 175.
Leprosy, why probably less common than of old, 176.
Lessees of the Crown, 266 *note*.
Lever, Sir Ashton, his museum, 6 *note*.
Leveret, suckled by a cat, 171.

Lewes, ring ousels near, 79.
Lice and birds, 127.
Licenses for oratories, 263.
Liega, la, 308 *note*.
Lime-blossoms, 350.
Lincecum on gossamer, 154 *note*.
Lincolnshire, spires of, 50.
Linnæus, x, xiii, xv; on water-vole, 23; on chaffinch, 29; on water-eft, 41; on verbosity, 68; on range of plants, 84; on cuckoo, 109; on nesting of fieldfare and redwing, 113; on hawks and cuckoo, 151; *compedes* of, 189, 327; on goldfish, 211; on crickets and cockroaches, 337; on cockroach, 338 *note*.
Linnets, congregate and chirp, 30.
Linnet, song of, 98, 103; flocking of, 112.
Lions and jackals, 120.
Lisle on loss of boar's tusks, 170.
Liss, *see* Lysse.
Lister on gossamer, 154.
Lithe, or Lythe, 258.
Liveries of religious houses, 280.
Living of Selborne, 252.
Lizards, green, at Farnham, 42; in Devonshire and Surrey, 50; green and Guernsey, 52; which lived in a college garden, 52.
Loaches from Ambresbury, 43.
Lodge Hill, 17.
Lombardy poplar, galls of, 349.
London, martins in, 131; swallows in, 139; sand-martins in, 144; swifts in, 150; in snowy weather, 226; "London smoke," 354.
London, Hugh, 284.
—— Thomas, 291, 293, 295.
Long Lithe, 258.
Long, Barnabas, vicar of Selborne, 254.
—— William, 292.
Long-billed birds fattening in frosts, 104.
Longspee, Ela, founds a chantry at Selborne, 273; who and what, 274, 275 *note*.
Longworth, John, vicar of Selborne, 253.
Loon, 326.
Lop and top of the Holt forest, 20.
Losel's wood, 4.
Love, in birds, 112.
Lower greensand, 3 *note*.
Lyge, la, 308 *note*.
Lyndewood's *Provinciale*, 282.
Lynne, John, vicar of Selborne, 252, 285.
Lysse, 1, 12.
Lythe or Lithe, 258.

Magdalen College, Oxford, holds patronage of Selborne, 252, 265; foundation of, 301 f.; Selborne Priory appropriated to, 302, 306, 311, 313; courts held at Selborne by, 315.
Magpie, flight of, 188; and missel-thrush, 322.

Mahomet on purification, 109.
Makerel, Thomas, 263.
MALM, black, what sort of soil, 2; ditto, white, 3.
Man, his food varies with climate, 183.
MARCH, the month of, two wonderfully hot days in March, 1777; the effects of that heat, 173.
Marcley Hill a deceitful ground, 194.
Market at Selborne, 265.
Markwick's Calendar and Observations, 319 *note*.
Marsh, cinquefoil, 185.
Marsham of Stratton, 347.
MARTIN, HOUSE, seen very late, 49; house, a monography of, 128; sand or bank, a monography of, 141; house, farther circumstances about, 206; house, more particulars concerning, 212.
—— nest of, 129, 214; late departures of, 25, 28, 49, 78, 212; late broods of, 81, 212; late arrival of, 67, 84; a summer bird of passage, 38, 94; migration of, xxxv, 22, 53, 77, 78, 111; young of, 22; feeding of young of, 70; persecuted by sparrows, 67, 129; mating of, 67; its note, 99; flies with other birds, 22; search for torpid, 206; secret dormitories of, 213.
—— sand, a summer migrant, 38, 94; history of, 141; flight of, 189; holes of, searched in March, 330.
—— POPE, his bull touching the revoking of certain things alienated from the Priory of Selborne, 286.
Mating of birds, 67.
Mauduit-hatch, 17.
Mauduit's wood, 258.
May-fly, 56, 339.
Maycock, Sampson, 285.
Mayewe, Richard, 302, 306.
Mazel, the engraver, 43.
Meadow-pipit, or titlark, song of, 80 and *note*, 97; cuckoo in nest of, 116.
Melolontha fullo, 54.
Memory, comparing animals by, 71.
MERCATU, de, et feriâ de Seleburne, a mistake in Bishop Tanner, 316.
Merton College, a haunt of swallows, 53.
Meteor, White's use of the word, 225 *note*.
Mezereon, 186.
MICE, small red, nondescript, 27; one of their nests described, 27; some farther account of, 31.
—— (harvest mice), devoured by dogs, refused by cats, 84.
Midges, swarms of, 343.
MIGRATION, actual, somewhat like it, 53; at Gibraltar, ocular demonstration of, 115.
—— of redwing, 113, 116, 118; of fieldfare, 60, 112, 113, 116; of ring ousel, 47, 49, 50, 58, 60, 69, 78, 110, 116, 135; of redstart, 106; of wheatear, 30, 134; of nightingale, 116, 134; of whitethroat, 106, 134; of blackcap, 104, 106, 134; of sedge-warbler, 106; of oriole, 114; of flycatcher, 86, 106; of swallow, 29, 53, 106, 111, 131, 136, 151, 331; of swallow, Adanson on, 80; of swallow, doubted, 174; swallows in hiding, 22; swallows haunting water, 216; of swallows and martins, 53, 77; of martin, 77, 78, 84, 111, 114, 128, 130, 131, 144, 174, 206, 212, 331; of sand-martin, 144, 331; of hirundines, 114, 134, 151, 175; of chaffinch, 30; of snow-bunting, 61; of

Royston crow, 116; of swift, 77, 81, 145, 148, 182; of bee-bird, 114; of hoopoe, 114; of stockdove, 80; of stone curlew, 47, 48, 49, 72, 73, 328; of black-winged stilt, 203; of woodcock, 112, 113, 115, 116; of grallæ, 118; White's views on, xxxi, 114; Aristotle on, xxxii; Barrington's views on, xviii, 114; Belon on migration of hawks and kites, 114; Eckmarck on, 118; Hasselquist on migration of short-winged birds, 31; of short-winged, soft-billed birds, 29; at Gibraltar, 115; to and from Andalusia, 72, 114, 115, 149, 204; delayed by severe spring, 106; numbers of birds leaving and returning, 183; internal migration, 111; lists of summer migrants, 38, 94; list of winter migrants, 95.
Military orders of the religious, 269 *note*.
Mill at Durton, 310; at Oakhanger, 310; at Selborne, 310.
MILLS, water, the Priory of Selborne in possession of several, 310.
Missel-thrush, its nest, 80; its autumn song, 83 *note*; its song, 98; its pugnacity, 151; its flight, 189; its broods destroyed by magpies, 322; feeds on berries of mistletoe and ivy, 322.
Mist called "London smoke," 354.
Mitford's edition of White's *Selborne*, xxx.
Mole, preyed upon by weasel, 83.
Mole-cricket, history of, 201.
Moll's map of Scotland, 89.
Monasteries encouragers of knowledge, 177 *note*; corruptions of, 287; trades and occupations of, 309; and towns, 316.
Monastic institutions, growth of, 260.
Monogamous birds, 67.
Monographers, 70, 108.
Montford, Simon de, at battle of Evesham, 261.
Moorhen, flight of, 189.
MOOSE-DEER, a female, some account of, 65; a male, where killed, 68.
—— in North America, 68.
Mordaunt, of the Peterborough family, 19.
Morning clouds, 355.
MORTON, JOHN, prior of Reygate, appointed prior of Selborne, 292.
Mosquitoes, devoured by swallows, 127.
Mostyn, Sir Roger, house-doves of, 91.
Moulting of birds, season of, 148.
Mount Caburn, 340.
Mulso, Hester, xii.
MUSEUM, countryman's, where, 24.
MUSIC, its powerful effects on some men's minds, 214.
Mussulmans, purification of, 109.
MYTILUS CRISTA GALLI, a curious fossil-shell, 5.

Natele, 260.
Natural History of the Year, 235.
Naturalist's Calendar, xiii, xxix, 319 *note*.
—— summer-evening walk, 56.
—— *Journal*, xiii, 48 *note*.
Nele, John, 304.
Nests of harvest-mouse, 27, 31; of water rat, 62; of ring-ousel, 80; of house sparrow, 84; of flycatcher, 86, 123; of honey-buzzard, 89; of sparrow-hawk, 90; of ring-dove, 91; of fieldfare, 113, 117; of redwing, 113; of

woodcock, 113; of willow-wren, 124; of white owl, 125; of house-martin, 128, 131, 140; of wheatear, 134; of swallow, 136, 139, 140; of sand-martin, 142, 330; of swift, 145; of missel-thrush, 152; of chaffinch, wren and martin, 214; of rook, 322; of thrush, 322; of wasps, 341.
Newhaven, water-ousel at, 110.
Newlyn, Henry, 308.
NEWT, or eft, water, some account of, 41, 44.
—— great crested, 47.
Newton Valence, 1; and Selborne, relative heights of, 221.
Newton, Prof. Alfred, his *Life of Gilbert White*, ix *note;* on White and Hester Mulso, xii; his notes to Bell's edition of White's *Selborne*, xxx; his *Dictionary of Birds*, art. Migration, xxxi *note;* on woodcock carrying its young, 70 *note;* on cuckoo, 103 *note;* on peregrine falcon, 216 *note;* on hen-harrier, 326 *note*.
Nich. de Cantia, 299, 300.
Nightingale, a summer migrant, 38, 94; cry of, 82; sings in the night, 96; silent by middle of June, 98; range in Britain, 116; song of, 118; ill provided for long flights, 134.
Nightjar, a summer migrant, 38, 94; its manners, 51, 52, 329; food of, 77, 85, 168, 329; structure of, 168; flight of, 188; serenade of, 190; its name of goatsucker, 328; and puckeridge, 328.
Noctule described by Daubenton and Buffon, xiv, 26 *note;* supposed by White to be nondescript, 51; its mode of life, 62, 63; its structure, 76.
NOREHILL, 2.
Norfolk meanly furnished with churches, 49.
Norman kings resided much at Winchester, 242.
North America, forests and lakes of, 163.
Northamptonshire, spires of, 50.
Norton, 260; farm, 4, 316.
Nose-fly, 341.
Nostoc, 353.
Notitia Monastica of Tanner quoted, 311.
Nun, *see* Titmouse.
Nuthatch, or jarbird, its noise, 38; its mode of opening a nut, 214.

OAK, a vast one planted on the Plestor, 4.
—— great, in the Holt, 347.
Oakhanger, 10, 17, 260, 309; House, 254, 258, 316; Jacobus de, 258, 310; mill at, 310.
Oaks of Losel's wood, 4.
Oakwoods, 17.
Observations on various parts of nature, 319.
Œstrus, 74.
Oglethorpe, Owen, 307, 315 *note*.
Oil a remedy for bite of viper, 41.
Olaus Magnus on migration of birds, xxxii.
One-berry, 185.
Oppian quoted, 33.
Orme's Head, pigeons on, 92.
Oseney, 275.
OSPREY, or sea-eagle, where shot, 79.
Ostrea carinata, 6 *note*.

Ostrea crista-galli, 6 *note*.
Otter, one, where killed, 68.
Ottobonus, constitutions of Legate, 282.
Ousel, *see* Ring-ousel.
Outlet explained, 24 *note*, 192 *note*.
Owen on glands of head of deer, 32 *note*.
Owl, brown, a tame one, 25; white or barn owl, the young not easily bred up, 25.
Owls hoot in different keys, 117; white, several particulars of, 125.
—— young, food of, 25; eagle-owl, 61; mating of, 67; infesting dove-houses, 67; hooting and screaming of, 117, 126, 190; prey of, 125; plumage, casts, flight, eyes of, 126; can live without water, 126.
Ox-eye (titmouse), 98.
Oxen will not fatten alone, 155; and horses poisoned by yew, 250.
Oxford, great benefactress to the university of, 275; Guernsey lizard at, 52; swallows stay late at, 25, 53.

Pairing of birds, 67.
Palm Sunday, 252.
Paradise of Selborne Priory, 308.
—— Gardens, Oxford, 325.
Parental care of animals, 123; of field-mouse, 124.
Paris, herb, 185.
Parrots use their bill as a third foot, 188.
Particular, White's use of, 64 *note*.
Partridges, mating of, 67; dust themselves, 108; roosting of, 323; artifice of, 123; thinned by frost, 228.
Passeres, melody of, 190.
Paynell, William, *alias* Stretford, 291.
Peacocks, their train not a tail, 75, 107 *note*.
—— notes of, 190.
Penkester, John, 285.
Pennant, Thomas, life of, xv; on slits beneath eyes of antelopes, 33 *note*; his *British Zoology*, 60, 107.
Peregrine falcon, 24, 26, 216, 326 *note*.
Periwinkle, less, 185.
Peter de la Roche, founder of Selborne Priory, 256.
Pettichaps, a very rare bird at Selborne, 215.
Peverell, Robert, 295.
Peyrson, Miles, vicar of Selborne, 253.
Pheasant, roosting of, 323; hybrid, 324; and hen-harrier, 326.
Pheasants dust themselves, 108.
Phillips, John, on Marcley Hill, 194.
Phippes, Thomas, vicar of Selborne, 253.
Piers Plowman, visions of, 287.
Pigeon, drinking of, 84; derived from rock-dove, 91; internal migration of, 92; clashing of wings of, 188.
Pigs eating their young, 124.
Pipistrelle flies in every month in the year, 174 *note*.
Pitch of note of owl, cuckoo, nightingale, swift, etc., 117-8.
Pittancies of a monastery, 280.
Plants, the more rare in Selborne, 185.

Plants, time of blooming of, 186.
Plestor, the, in the midst of the village, what, 4, 264, 265, 266.
—— shrew-ash on, 162.
Plot, Dr., on surbedding stone; on firestone, 7 *note;* his rule for echoes, 179.
Plover, the stilt, a rare and curious bird, 202.
Plumage, colour of, affected by food, 34.
Plumpton-plain, near Lewes, Ray on, 132.
Pochard, a resident and winter visitant, 96 *note.*
Pond, Wolmer, its measurement, fowls, etc., 18.
Ponds on elevations, why seldom dry, 164.
—— named after extinct animals, 18 *note.*
—— frequented by cattle, 18.
Pope Innocent VIII., bull of, 305; Martin, bull of, 286.
Porch, church, its gothic arch and folding-doors, 248.
Portugal laurels untouched by frost, 224, 228, 229 *note;* scorched by frost of 1784, 229.
Poultry, sagacity of, 323; roosting of, 323.
Powlet, of Rotherfield House, 265.
Preceptory, an unnoticed one at Selborne, 270; an attempt to explain what a preceptory was, 272.
Preston, James, 302 to 305.
Prince Rupert, a mechanic and artist, 19.
Prior, forms for election of, 275.
Priories, alien, 259, 260.
Priors of Selborne, a list of, 299, 300.
Priory of Selborne, when and by whom founded, 256; how endowed at first, 259; its present state, 313.
—— reduced to a chantry, 307.
—— farm, 254, 313.
Protective resemblance of stone-curlew, xxiii, 36, 73, 107 *note.*
Ptinus, 336.
Puckeridge, 328.
Puffins, building underground, 48.
Purlieu, 17.
Putworth, Richard, 284.

Quadrupeds, Observations on, 333.
Quails, 9; on south coast, 30.
Queen Anne in Wolmer-forest, 14.
Queen's bank, why so called, 14.
Quicksilver mines of Carniola, 106.

Rabbits and turf, 334.
Rabbys, William, 304.
Radfredus the presbyter, 243.
Radiation of heat under a clear sky, 224 *note.*
Ragstone, 7.
Rain, the mean of, not to be ascertained at any place till after many years, 9 *note;* what has fallen at Selborne of late years, 9; that of Selborne compared with that of Plymouth, 220.
Rainfall of 1769, 52; of 1774 and 1764, 141; of spring of 1774, 194; of Rutland, 113.

Ranatra, 339.
Range of animals, 84; of plants, 84.
RAT, WATER, a curious anecdote concerning one, 62.
Raven breeds early, 99; playful skirmish of, 188; note of, 190; raven-tree, 5.
Ravens on rock of Gibraltar, 123.
Ray, John, xiii, xiv, xv, xxv; on slitting the nostrils of asses, 33; on lizards, 42; on lizards of Ireland, 43; on sedge-warbler, 59; on pulveratrices, 108; his descriptions, 119; on the South Downs, 132; on celery and endive in Italy, 178; on honey-buzzard, 321; and Derham's use of the word *meteor*, 225.
Reading, carp at, 85.
Réaumur, xiii, xiv; on Hippobosca, 128; on honey-dew, 231 *note;* on Tortrix, 339 *note.*
Red-backed Butcher-bird, 46.
RED-BREASTS, why supposed to sing in autumn only, 84.
—— food of, 84; do not migrate, their food and haunts, 95; sing all the year, 97, 100; in a cage, 101; hatches cuckoo's egg, 102; nests early, 99 *note.*
Red-deer, *see* Deer.
RED-START, its singularities, 85.
—— in September, 25; song of, 37, 85; a summer migrant, 38, 94, 321; flicker of tail of, 83; song ceases in June, 98; ill-provided for long flights, 134.
RED-WINGS, the first birds that suffer by frost, 104, 118.
—— taken in hedges by bat-fowlers, 64; winter migrants, 96, 116, 118; place of nesting, 112; nest and eggs, 113; in severe weather, 113, 321.
Reed-bunting, 106 *note.*
"Reed-sparrow," 104, 106.
Reflection by fog, 355.
Register, Beaufort's, 283, 285; Waynflete's, 290 f.
Reid, Clement, on dew-ponds, 166 *note.*
RELICS belonging to the Priory of Selborne, 289.
Religious houses, distresses of, 283; corruptions of, 287; prediction concerning, 288.
Rennie's edition of White's *Selborne*, xxx.
Reptiles of Selborne, 39, 42 *note.*
Richard, bishop of Chichester, 259.
Ring-dove, mode of life of, 91; young of, 93; breeding of, 99, 117; cuckoo in nest of, 102; in spring, 188; food of, 325.
RING-OUSEL, where found, 28; more particulars of, 46; farther account of, 54; more of ditto, 58; breed in Dartmoor and the Peak of Derby, 70, 80; farther remarks concerning, 78, 79.
—— food of, 28, 47, 54; a flock of, in Hampshire, 46; internal migration of, 46, 47, 49, 50, 54, 58, 60, 69, 78, 95, 110, 116, 135; on Sussex Downs, 110.
Ringmer, near Lewes, 108 *note;* birds of, 110.
Roads to Selborne, xxvi and *note*, 255.
Rock-dove, 91.
"Rockiers," 92.
Rocky lane, 8.
Rogate, 1, 12.

Roger, vicar of Selborne, 252.
Roman coins found in Wolmer-pond, 239; at Blackmoor, 240 *note*.
Rooks, perfectly white, 34; an amusing anecdote about, 219.
—— breed early, 99; attended by daws and starlings, 120, 135; sensitive beak of, 120; excursions of, 135; tumbling of, 188; attempts to sing of, 190; evening proceedings of, 219; in snowy weather, 226; mode of life of, 322; and frozen sleet, 354.
Rookery at Ringmer, 135.
Roosting of poultry, turkeys, etc., 323.
Royston crow, internal migration of, 96, 116.
Rupert, Prince, 19 and *note*.
Ruperta, whose daughter and wife, 19.
Rupibus, or Roche, de la, Peter, who and what, 256.
Rupture, superstitious cure for, 161.
Rushes instead of candles, matter of much utility in humble life, 157.
Rush-burners and rush-holders, 159 *note*.
Rust balls, 8.
Rutland, county of, what rain fell there, 113.

Saffron, 187.
Sallet, 178.
Salt flesh in mediæval England, 176.
Sand-martin, *see* Martin.
Sandpiper, in southern counties, 46; wings of, 189.
Sap, flow of, 348.
Saunford, Robert, grants from, to Selborne priory, 271.
Saxifrage, opposite golden, 186.
Saxon words surviving at Selborne, 241 *note*.
Scale-insects (Coccus), 208.
Scallops, or pectines, where found, 6.
Scopoli, J. A., xv, 68, 70, 71, 106, 108; on martin, 70; on woodcock, 70, 113; on swift, 150; on may-fly, 340.
Scotland, in what its maps are defective, 89.
Sea-birds, few at Selborne, 25.
Secta molendini, claimed by the prior of Selborne, 310.
Sedge-bird [Sedge-warbler], some particulars about, 55, 59; more account of, 82; a delicate polyglot, 101, 106.
—— the lesser reed-sparrow of Ray, 59, 61; a summer migrant, 94; sings in the night, 82, 96; sings till July, 98; a soft-billed bird, 106.
Sedgwick on food of woodcock, 101 *note*.
Seeds, dormant, 351.
Serrated claw of nightjar, 77.
Selborne parish, its situation and abuttals, 1; village, how circumstanced, 2; the manor of, abounds with game, 9; parish of, of vast extent, why, 9; rain, quantity of, considerable, why, 9; population, births and burials of, 10; produces near half the birds of Great Britain, 86; why a Saxon village, 241; becomes a market town, 265.
—— its variety of soil and elevation, xxvi; its seclusion, xxvi; its geology, xxvii; White's *History of*, xxix.
—— Priory, *see* Priory.
—— Lord, on Romano-British antiquities of Selborne, 240 *note*, 317 *note*.
Seleburn, 260.

Senegal, swallows in, 80.
Sexes of birds hard to distinguish in first plumage, 107.
" Shakey " timber, 3.
SHARP, JOHN, appointed prior, 297.
—— *alias* Glastenbury, prior of Selborne, 298, 299, 301, 308.
SHEEP, SUSSEX, horned and hornless, 133.
—— close grazers, 16; when intent on grazing, 119; flocking together, 155; tear their coats in mild winters, 333; confusion among, after shearing, 333.
SHINGLES, Selborne church mostly covered with, 249.
—— on roofs, 308 *note*.
Shore, T. W., on dew-ponds, 166 *note*, 167 *note*.
Short Heath, 17.
Shrew-ash, 161.
Shrike, great grey, in Tisted park, 79; red-backed, its food, 46; a rare bird at Selborne, 80; woodchat, 60 *note*.
Shrubs, protection of, from frost, 222.
Siberian plants cultivated in England, 223.
Side-fly, 127.
Silk-tail, 27, 96.
Siskin, name of, 111 *note*.
Skunk, 59.
Skylark, sings early and late, 97; sings as it flies, 99; dusting and washing of, 109, 116; its movements while singing, 189; in severe weather, 321.
SLUGS,[1] very injurious to wheat just come out of the ground, by eating off the blade; and by their infinite numbers occasioning incredible havock, 173.
Smell, animals recognised by, 333.
Smiters, a kind of pigeon, 188.
Smother-flies (aphides), 210, 231.
Snails and slugs, 345.
SNAKE, stinks se defendendo, 59.
—— eat once in the year, 42; common in water, 42; its slough, 346.
SNIPES, their piping and humming, 23, 38, 81 and *note*.
—— breeding of, 23, 96, 188; food of, 101; make no nest, 330.
Snooke, Mrs., of Ringmer, 108 *note*.
Snow, heavy falls of, 222, 225, 228; a kindly meteor to vegetation, 222, 225.
SNOW-FLECK [Snow-bunting], sometimes seen at Selborne, 61.
SOCIALITY in the brute creation, instances of, 155.
Soft-billed birds, food of, 95; list of such as stay with us the year round, 95.
Solstices, winter and summer, 193.
Somercotes, Thomas, 303.
Song and incubation of birds, 100; of birds, due to rivalry, 120.
—— birds, come under Passeres, 99; why they cease to sing, 105.
—— thrush breeds early, 99; suffers by frost, 104.
South Badeisley, 270.
South Downs, 132.

[1] For the amazing ravages committed on turnips, wheat, clover, field cabbage-seeds, etc., by slugs, and a rational and easy method of destroying them, see a sensible letter by Mr. Henry Vagg, of Chilcompton, in the county of Somerset, lately made public at the request of the gentlemen of that neighbourhood.—G. W.

Southington, or Sudington, 270, 271.
Sow, prodigious fecundity of one, 170.
Sparrow, hedge, flirt with their wings in breeding-time, 83; their piping noise, 83; their food, 87.
—— house, building of, 84; dusts and washes, 109; expelled by swift, expels martins, 145.
—— hawk breeds in old crows' nests, 83; nest and larder of, 90; and brood-hens, 192.
Sphinx ocellata, 340.
Spider, threads emitted by, 154; and ichneumon, 341.
Spires, necessary ingredients in an elegant landscape, 50.
Sprat loons, 327.
Spring Gardens, exhibition of birds in, 24.
Spring of 1739-40, 106; of 1770-71, 136.
Springs at Selborne, 2.
Sprout-cale, 177.
Spurge laurel, 186.
Squirrel, its mode of opening a nut, 214; suckled by a cat, 334.
Stag-hunt in Wolmer-forest, 14.
Starlings and rooks, 120; and lapwings, 120; flight of, 188.
Stawel, Lord, 19.
Stepe, or Stype, John, 284; prior of Selborne, 288; death of, 290.
Stephen de Lucy, 259.
Stickleback at Selborne, 25; species of, 43.
Stillingfleet, xv; on wheatear, 30.
Stilt, black-winged, or stilt plover, 202.
Stock-dove, mode of life of, 80, 91; appears late, 96, 117; formerly abounded at Selborne, 117.
Stone, free, its uses and advantages, 7; rag, its qualities and uses, 7; sand, or forest, 8; yellow or rust colour, 8.
Stone-chatter, though a soft-billed bird, stays with us round the year, 81, 95; common along the coast in autumn, 111.
Stone curlew, some account of, 35; farther account of, 72.
—— protective resemblance of, xxiii, 36; a summer migrant, 38, 72, 94; congregates in vast flocks in autumn, 47; egg of, 59; clamouring of, 63; in Andalusia, 73; note of, 219, 328; habits of, 328.
Stonehenge, jackdaws nesting in, 48.
Στοργη of animals, several instances of, 123.
Storm-cock (missel-thrush), 80.
Stratfield, William, 293, 295.
Stratford, bishop of Winchester, 275.
Stretford, *alias* Paynell, William, 291.
Stuart, Sir Simeon, gives a bell to Selborne church, 248.
Stubb, Laurence, 307.
Sudington, a preceptory, 269.
Summer birds of passage, lists of, 37, 94.
Summers, 1781 and 1783, unusually sultry, 230.
Sun-dews, 185.
Sunday, ancient deeds dated on, 274 *note*.
Superstitions, 161.
Surbedding of stone, 7.
Sussex, Downs of, 2, 110, 132; meanly furnished with churches, 49; sheep of, 133.

SWALLOW, the house or chimney, a monography of, 136, 151; more particulars about, 216.
—— supposed torpidity of, 21, 22, 114, 121, 174; young broods of, 22; migration of, 22, 30, 38, 53, 77, 94, 111, 136, 331; retiring under water, 28; on the Thames, 28, 31; early arrival of, 67, 105, 106, 174; Adanson on migration of, 80; sexes of, 82; late song of, 97, 103; sings as it flies, 99; number of broods of, 148; flight of, 189; shrill alarm of, 190; supposed attachment to water, 215.
Swallows increase as summer advances, 101; friendly interposition of, 127; and swifts, no rivalry between, 108; and hawk, 123; and dipterous insects, 127.
Swammerdam on frogs, 40.
Swan turns white the second year, and breeds the third, 83; migration of, 96, 115 *note*.
Sweden, number of birds in, 86.
Swedish name of swallow, 136; of swift, 150.
SWIFT, or black martin, a monography of, 145; the same number usually seems to return to the same place, 182; more circumstances about, 207.
—— torpidity of, 21; migration of, 22, 38, 62, 81, 94; seen late in August, 25, 77, 207; flight and retreat of, 56; drinks on the wing, 82; notes of, 118; Alpine, 72 and *note*, 149; constant in number at Selborne, 182; flight of, 189; late broods of, 207; and swallows, no rivalry between, 108.
Swimming birds, form of, 326.
Sycamore, 349.
Sydenmeade, 260.
Sylvester, Thomas, 309.

Tadpoles, 41.
Tameness of birds, 100.
Taming of animals, 50.
Tan-house garden, 309.
Tanner, Bishop, on market and fair of Selborne, 265 *note;* on Templars' houses in Hampshire, 270; his *Notitia Monastica*, 311.
Tanner's Wood, 309 *note*.
Tannery at Selborne Priory, 309.
Taylor, Christopher, vicar of Selborne, 256.
TEALS, where bred, 13, 17, 82, 96, 125.
Teasel, small, 186.
Temperatures, low, at Selborne, 224, 229.
TEMPLE, a manor-house so called, described, 263, 267.
—— oaks of, 3; places so named, 270 *note;* manor of, 272; farm of, 316.
Tench, 18.
"Tenpenny nails" in walls, 8.
Thames, sand-martins on, 142; frozen over in 1776, 227.
Thaws originate underground, 224, 354; rapid, 227, 354.
Thermometer, insufficiently graduated, 229; valuable information given by, 230.
Thompson on food of woodcock, 101 *note*.
Thomson's Seasons quoted, 18.
THRUSH, MISSEL, very fierce and pugnacious, 151.
—— its fight with magpies, 152; shy and wild, yet builds in frequented spots, 152 and *note;* its food, 322.

Thrush, song, feeds on cuckoo-pint, 34; and snails, 322; sings in autumn, 83, 97; soon fails in severe frost, 104; and kestrel, 123.
Thunderstorms, 234.
Tiled house, the first at Nottingham, 308 *note*.
Tiles, when first used for roofing, 308 *note*.
Timber, a large fall of, in the Holt-forest, 20.
—— good soil for, 3; tipulæ, 343.
Titlark, song of, 80; sings after midsummer, 97; sings as it flies, 99; breeds late, 100; sings in the night, when caged, 101; common along the coast in autumn, 111; its flight and song, 189; in severe weather, 321.
Tit-mice, their mode of life and support, 87.
—— mouse, marsh and great, song of, 84, 87, 98; resorts of different species of, 87; great, food of, 88; pulling straws by great, 87, 223.
Toad, procreation of, 39; nourished with maggots, 40; venom of, 40 *note*; cancer cured by, 44, 49; reclaimed, 50.
Tomb in Selborne church, 244.
Toothwort, 186.
Torpidity, *see* Hibernation.
Torrets, 17 *note*.
Tortoise, a family one, 111; more particulars of, 122; farther circumstances about, 135, 173, 204; more remarks respecting, 205.
Tortrix, of oak, 339.
Tower, the church, 248; its bells tuneable, 248; motto on the treble bell, just as it is printed, 248.
Trees, why perfect alembics, how, 163.
—— subterranean, 12; cleft for cure of ruptured babes, 161; condensers of vapour, 163; promoters of lakes and rivers, 163; order of losing their leaves, 346; size of, 347; growth of, 347.
Treviranus on honey-dew, 232 *note*.
Tring, witches drowned at, 161.
Trotton, 1, 12.
Trout, 25.
Trucstede, 308 *note*.
True-love, 185.
Truffle-hunter, 352.
Truffles, 186.
Tumblers, a kind of pigeons, 188.
Tun-bridge, by whom built, 310.
Turf, fairy-rings in, 353.
Turkey, gobbling of, 191; roosting of, 323.
Turnip-fly, 74.
Turtle-dove, 38.
Turville, Thomas, of Hawkley, 255.
Tutsan, 185.
Tybbe, Hugo, vicar of Selborne, 252.
Tylehouse grove, 308.
Tyndall on weather and sound, 180 *note*.

Valencia, sand-martins in, 144.
Vasci, Americus de, 272.
Vegetables, effect of upon health, 176.
Vicarage of Selborne, some account of, 252.

Vicars of Selborne, a list of, 252.
Viper, blind-worm, and snake, some account of, 41.
Viper, pregnant one, some circumstances about, 168.
—— venom of, 41; eggs of, 42; said to admit her young into her throat, 42; fangs of, 169.
Virgil on bees drinking, 82; on dove, 93; on climate of Italy, 105; on swallow, 136, 140; on sounds injurious to bees, 180.
Virgins commemorated by garlands, 244.
Visitatio notabilis de Seleburne, a curious document abridged, 277.
Volcanic eruptions and haze, 233 *note*.
Volcano formed in 1783, 233.

Wade, General, roads of, 89.
Wagtails, with us in winter, 30, 81, 87; haunts and food of, in winter, 87, 95; their walk, 189; and cows, 332.
Wakes, the, at Selborne, ix.
Waldon-lodge, what, and by whom kept up, 17.
Waller of Beaconsfield, a promoter of horticulture, 177.
Walpole, Horace, xxiv.
Walter de Insula, 276.
Waltham blacks much infested Wolmer-forest, 14; by their enormities occasioned the black act, 15.
—— chase, 15.
Walwort, 186.
Warble, 328.
Warbler, *see* Grasshopper lark and Sedge-bird.
Ward-le-ham, 1, 266 *note*; King John at, 242; park, 17.
Warton, Rev. Thomas, xi; Joseph and Thomas, xi.
Washing of birds, 109, 138, 144.
Wasps, a pest in gardens, 231; and fowls, 321; habits of, 341.
Wastes, of service to neighbourhood, 16.
Watch-lights, 158.
Water, cattle frequenting, 18; condensed by trees, 163; eft, 44; ouzel, 110; rat, 62; shrew, 62; vole, 23.
Waterford, Henry, 263.
Waverley, sand-martin at, 330.
Waxwing, 27, 96.
Waynflete, William of, endeavours to reform the Priory of Selborne, 288; dissolves it, 301.
—— founds Magdalen College, Oxford, 301; death of, 306; obits ordained by, 307.
Weasel (cane), 34; preys on moles, 83.
Weather, its effect upon sounds, 180; and corn, 355; at Selborne, 222.
Weaver's down, 8.
Weevils, 337 *note*.
Well-head, a fine perennial spring, 2, 241.
Wells, their usual depth in Selborne village, 3.
Welsh name of missel-thrush, 152.
Weston, Thomas, prior of Selborne, 284.
Whaddon chapel, where, 309.
[Whame, *see* Fly.]
Wheat-crops and hot summers, 352.

WHEATEAR, the bird so called, some account of, 30; Sussex bird, so called, more particulars of, 134.
—— migration of, 31; said to stay with us the whole year, 81 and *note*, 95; in winter, 88; common along the coast in autumn, 111.
Wheaten bread, 177.
Whinchat stays with us all the year, 81, 88, 95; common along the coast in autumn, 111.
White, malm, 3; hares, 61; rooks, 34.
White, Ann, x.
—— Benjamin, v.
—— Rev. Charles, x.
—— Gilbert, vicar of Selborne, ix, x, 254; his epitaph, 246.
—— Gilbert, the naturalist, his birth, ix; at school, xi, 314; at Oxford, xi; as a clergyman, xi; origin of his taste for natural history, xii; his notes and diaries, xiii; books used by, xv; quotation by, xv; his history of Selborne, xxi; his death, xxi; his person and habits, xxi; his merit as a naturalist, xxii; little interested in current events, xxiv; charm of his history, xxv; his view of the migration of birds, xxxi; his preface to the *History of Selborne*, xxxix; his deafness, 152.
—— Rev. Henry, x.
—— John, father of Gilbert White, the naturalist, ix, 256; repairs roads at Selborne, 255.
—— Rev. John, x, 123, 145, 190, 204; on coccus of the vine, 209.
—— Rebecca, x.
—— Sampson, ix.
—— Thomas Holt, x.
—— William, vicar of Selborne, 253.
—— of Newton, 326.
WHITE-THROAT, some particulars about, 85.
—— a summer migrant, 38, 94; late return of, 67; notes of, 85; sings after midsummer, 98, 103; sings as it flies, 99; ill-provided for long flights, 134; its gestures, 189; supposed, 215 *note*.
Whortleberry, 185.
Wicliffe's doctrines, 287.
Widgeon, a winter-migrant, 96.
Wildman, a noted bee-master, 160 *note*.
Willow-wrens, 23, 35; three species of, 36; how distinguished, 45; summer migrants, 38, 94; silent at midsummer, 98; nest of, 124.
Willughby, Francis, xiii, xiv, xv; on migration of birds, xxxiv; visits Andalusia, 31; on sand-martins in Spain, 144.
WINCHESTER, HOADLY, BISHOP OF, his humane objection to restocking Waltham chase with deer, 15.
—— Norman kings resided much at, 242; cathedral of, 243 *note;* feuds between religious houses at, 270.
Winchilsea, king's transports at, 267.
Wings of birds, various forms of, 188.
Winter, insects in, 335; birds of passage, 95; of 1739-40, 32, 106, 113; of 1767-8, 32.
Wishanger common, sand-martin on, 331.
WOLMER, FOREST OF, some account of, 12, 19; how abutted upon, 12; has abounded with fossil trees, 12; haunted by many sorts of wild fowl, 13; once abounded with heath cocks, or black game, 13; with red deer, 13.

Wolmer forest, xxvii, 3; Queen Anne in, 14; teal in ponds of, 82; pond, 18; its birds, 19; coins found in, 19, 239.
Wood, fossil, where found, 219.
—— Losel's, its taper oaks, 4; its raven-tree, 5.
—— boring insects, 336.
Woodchat shrike, 60.
Woodcocks, some sluggish and sleepy, 116, 119.
—— carrying of young by, 70; winter migrants, 96; food of, 101 *note;* retire in spring, 112; nesting and breeding of, 113; migration of, 115, 116.
Woodlark hangs poised in the air, 57, 189; sings in autumn and January, 83, 97, 103; sings in the night, 96; sings as it flies, 99.
Woodpecker, noise of, 38, 190; flight of, 188; uses its tail for support, 188.
Wood-pigeon, *see* Stock-dove.
Wood-wren, its haunts and song, 22; a summer migrant, 38, 94; late arrival of, 67; its song, 99.
Woods, Henry, of Shopwyke, x; John, of Chilgrove, xxiii.
Worldham, *see* Ward-le-ham.
Worms, earth, no inconsiderable link in the chain of nature, some account of, 172.
Wornils (maggots of Warble-fly), 329.
Wren, though a soft-billed bird, stays with us all the year, 95; sings all the year, 84 *note*, 97, 100, 103; sings as it flies, 99; nest of, 214.
—— golden-crowned, hangs back downwards, 39; stays with us the year round, 95; hardly to be called a singing bird, 98; the smallest British bird, 100.
Wrens, willow, three species, 36, 45.
Wryneck, a summer migrant, 38, 86, 94; its note, 94; gait and food of, 332.
Wych elm or hazel, 4.
Wykeham, William of, his liberal behaviour toward the Priory of Selborne, 282.
—— and Winchester cathedral, 243 *note;* his visitation of Selborne Priory, 276.
Wynchestre, John, chosen Prior of Selborne, "per viam, vel formam simplicis compromissi," 284.
Wyndesor, William, elected Prior of Selborne irregularly, and set aside by the visitor, 293.
—— 291, 294.

Yard, church, of Selborne, a scanty one, 249.
Year, Natural History of the, 235.
Yellow-wort, 185.
Yellowhammer, sings from February to August, 97; breeds very late, 100.
Yeoman-prickers, their agility as horsemen, 14.
Yew-branches carried on Palm Sunday, 252.
Yew-tree, a vast one, in Selborne churchyard, 250.
—— male and female, 250; poisonous to certain animals, 250.
Yew-trees in churchyards, 251.

Putnam's Library of Standard Literature

Published by G. P. PUTNAM'S SONS for the United States, in co-operation with MESSRS. METHUEN & CO., of London

The volumes are handsomely printed and tastefully bound. They will be issued at the uniform price of $1.75

The series comprises reprints of standard works, which are in large part masterpieces of literature. It will also, however, include certain works which have never been reprinted, or which have not been in print for a considerable period, together with others which have been reprinted only in limited editions, and which have, therefore, not heretofore been available for the use of students of to-day. The series will thus consist in part of rare books of special value for the scholar, and in part of more familiar works appealing to the wider circle of intelligent readers.

In the editorial work required for the selection of the books and for the preparation of the same for the press, the collaboration has been secured of a series of able scholars, each an authority on the subject-matter considered. The volumes will be characterized by an accurate text, and will include scholarly introductions and notes in a form convenient for reference. The notes are placed at the foot of the page and will present such material as is necessary to make the text intelligible to modern readers, and to bring the books up to the standard of modern scholarship.

THE EARLIER PUBLICATIONS IN THE SERIES WILL COMPRISE THE FOLLOWING WORKS:

MEMOIRS OF MY LIFE AND WRITINGS.

By EDWARD GIBBON. Edited by G. BIRKBECK HILL, LL.D., D.C.L. Honorary Fellow of Pembroke College, Oxford.

THE EARLY POEMS OF LORD TENNYSON.

Edited by JOHN CHURTON COLLINS.

THE DIVINE COMEDY OF DANTE ALIGHIERI.

The Italian text. Edited by PAGET TOYNBEE, M.A.

THE LIFE OF THOMAS ELLWOOD, QUAKER.

Edited by C. G. CRUMP, B.A.

THE JOURNAL TO STELLA.

By JONATHAN SWIFT. Edited by G. A. AITKEN, M.A.

THE NATURAL HISTORY OF SELBORNE.

By GILBERT WHITE. Edited by L. C. MIALL, F.R.S.

LORD CHESTERFIELD'S LETTERS TO HIS SON

Edited by CHARLES STRACHEY and A. CALTHROP. 2 vols.

THE FRENCH REVOLUTION

By THOMAS CARLYLE. Edited by C. R. L. FLETCHER, M.A., Fellow of Magdalen College, Oxford. 2 vols.

TO BE FOLLOWED BY:

THE LIFE OF SAMUEL JOHNSON, LL.D.

By JAMES BOSWELL. Edited by T. SECCOMBE. 3 vols.

THE WEALTH OF NATIONS.

By ADAM SMITH. Edited by EDWIN CANNAN, M.A. 2 vols.

CRITICAL AND HISTORICAL ESSAYS BY LORD MACAULAY.

Edited by F. C. MONTAGUE, M.A. 3 vols.

THE HISTORY OF CHARLES THE FIFTH.

By WILLIAM ROBERTSON, D.D. Edited by MARTIN A. S. HUME, M.A.

LETTERS AND SPEECHES OF OLIVER CROMWELL.

By THOMAS CARLYLE. Edited by S. C. LOMAS, with an introduction by C. H. FIRTH, M.A. 3 vols.

THE LIFE AND WORKS OF CHARLES LAMB.
Edited by E. V. LUCAS. 5 vols.

THE BIOGRAPHIA LITERARIA OF S. T. COLERIDGE.
Edited by T. HUTCHINSON.

THE ANALOGY OF RELIGION.
By JOSEPH BUTLER, D.D. Edited by H. H. WILLIAMS, M.A., Fellow and Lecturer of Hertford College, Oxford.

THE LEVIATHAN.
By THOMAS HOBBES. Edited by W. G. POGSON SMITH, M.A., Fellow of St. John's College, Oxford. 2 vols.

THE CONSTITUTIONAL HISTORY OF ENGLAND.
By HENRY HALLAM. Edited by D. J. MEDLEY, M.A. 2 vols.

THE WORKS OF SIR PHILIP SIDNEY
Edited by A. W. Pollard, M.A.

THE POEMS OF JOHN MILTON.
Edited by H. C. BEECHING, M.A. 2 vols.

THE POEMS OF PERCY BYSSHE SHELLEY.
Edited by A. C. BRADLEY, M.A.

THE POEMS OF JOHN KEATS.
Edited by E. DE SELINCOURT, M.A.

THE POEMS OF WILLIAM WORDSWORTH.
Edited by NOWELL C. SMITH, M.A.

THE POEMS AND LETTERS OF WILLIAM COWPER.
Edited by J. C. BAILEY, M.A.

THE EARLY POEMS OF ROBERT BROWNING.
Edited by H. C. BEECHING and C. GRIFFIN.

THE POEMS OF EDMUND SPENSER.
Edited by HAROLD LITTLEDALE.

A Uniform Edition of the

Works of George Borrow

Illustrated. Octavo, per vol., $2.00

A new and popular edition, containing the authorized and complete texts, and including certain suppressed material now printed for the first time, and with notes, etc., by WILLIAM I. KNAPP, author of "The Life of George Borrow." The volumes are:

The Bible in Spain **Romany Rye**
Lavengro **The Gypsies of Spain**
Wild Wales

5 vols. in a box. Illustrated. 8vo, per set, $10.00

The text of these volumes reproduces with fidelity the first issues of 1851 and 1857, with the addition of certain suppressed incidents, in the case of the "Lavengro." This is the first uniform edition of Borrow's works to appear in this country, and the fact that they are to be edited by the famous Scholar Gypsy's biographer, Prof. W. I. Knapp, is sufficient criterion of their excellence. Each volume is illustrated throughout with etchings and other reproductions of places mentioned in the text. No Borrowite can be content, and no lover of original literature should be content, not to know Borrow in these editions.

The Life, Writings, and Correspondence of

George Borrow

Author of "The Bible in Spain," "Lavengro," etc.

1803–1881

Based on official and other authentic sources

By William I. Knapp, Ph.D., LL.D.

Late of Yale and Chicago Universities

Two volumes. Illustrated. 8vo $6.00

New York **G. P. Putnam's Sons** **London**

5
7
10
23
1

THIS BOOK IS DUE
STAMPED

14 DAY USE
RETURN TO DESK FROM WHICH BORROWED

LOAN DEPT.

This book is due on the last date stamped below, or on the date to which renewed.
Renewed books are subject to immediate recall.

3Apr'64MM

REC'D LD
JUL 13'65 -8 AM

DEC 15 1966 72

RECEIVED
DEC 20 '66 -11 AM
LOAN DEPT.

JUL 29 1970

REC'D LD AUG 25 70 -10 AM 04

LD 21A–40*m*-11,'63
(E1602s10)476B

General Library
University of California
Berkeley

YB 77620